CONSUMERS' INFORMATION SEARCH

WHEN MAKING INVESTMENT DECISIONS

by

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(Under the direction of Jinkook Lee)

ABSTRACT

Investment decisions are decisions about future consumption as well as the purchase of intangible goods, which involve both high uncertainty and high perceived risk. Based on the literature on consumers' information search, this study proposes that the extent of consumers' information search is influenced by investment-specific individual differences (subjective knowledge, the amount of investment and perceived risk), personal traits (attitudes toward risk and inherent novelty seeking) and demographic characteristics (age, education and income). Consumers' use of information sources is also investigated; the sources include literature, media, the Internet, friends/family and professional financial services providers. Using data from 2000-01 MacroMonitor, supporting empirical evidence is found for all of the proposed determinants' impacts on consumers' information search except education. Subjective knowledge and income are also found to significantly and differently influence consumers' use of each of the information sources.

INDEX WORDS: Investment decisions, Information search, Information sources, Financial investment, Consumer decision making

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CHAPTER 1

INTRODUCTION

With the sustained prosperity of the U.S. economy, the investment[1] market has grown

dramatically during the past decade. The Dow Jones Index started at around 60 points in

1900 and reached 3,000 points by 1992 (Ley, 1996). The index rose from 3,000 points to

10,000 points during 1992-2000. As a result, the investment service industry has

experienced a phenomenal explosion. By the end of 1997, there were a total of 19,869

securities brokerages with the annual sales of $72,756.5 million and 7,807 investment

advice establishments with the annual sales of $9,398 million (US Bureau of Census,

1997).

Consumers engage in investment activities by purchasing financial products, such as

certificates of deposits (CDs), stocks, bonds, and mutual funds, directly from the

producers of the investment products or indirectly through intermediaries such as brokers

and financial planners. As a product, investments have distinct characteristics compared

to tangible goods. First, investment products are intangible goods. They cannot be felt,

touched, or tasted as can tangible goods. The value of the investment is the embedded

right of reaping the subsequent benefits, instead of the tangible media that investors

physically hold as proof of their ownership of the investment products (e.g. paper

certificates). In other words, consumers purchase investment products to earn investment

income derived from these products, such as interest, dividends and/or capital gains.

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[1] In this study, investments refer to financial assets (CDs, stocks, bonds, mutual funds), not real assets, such
as real estate, collectibles, etc.

Also, unlike tangible goods, the performance of investment products actually depends on the performance of the parties that produce the investment products, such as the company who issues the stocks, which is further affected by micro- as well as macro-economic factors.

When making investment decisions, investors tend to find a balance between the predicted investment income and the predicted risk of losses, both of which can be actually realized only when return is received or loss takes place. When making new investment decisions, new predictions have to be made rather than just relying on past experience. Therefore, compared to other types of goods, investment products have more credence characteristics about which consumers are uncertain even after the purchase. The value of certain types of investment products is always subject to change because there are many types of risk, such as purchasing power risk, interest rate risk, business risk, financial risk and market risk. The change in the values of the investments is dramatic sometimes. The risk of loss in the investment markets may be larger than in tangible goods markets.

The decision-making for investment products can be described within the framework of consumer purchase decision-making, which is depicted as a series of steps that include problem recognition, information search, evaluation of alternatives, purchase decision, and post-purchase behavior (Schmidt & Spreng, 1996). Under this framework, information search is one of the critical elements of consumer decision-making (Malhotra, 1983; Moore & Lehmann, 1980; Newman, 1977). Information plays an essential role in purchasing decisions, especially for investment products. Benefits of searching for information could be getting products with higher benefits per dollar spent

or increased satisfaction with the products and/or decisions (Bettman, 1979; Punj & Staelin, 1983). Searching for information also reduces risk, a major benefit of information search noted by Bennett and Harrel (1975).

Consumers might engage in more search activities before making investment decisions than they do before purchasing other goods. Previous researchers provided two different reasons. First, consumers tend to engage in more extensive search activities when purchasing products that carry more risks (Beatty & Smith, 1987; Capon & Burke, 1980; Cunningham, 1967b; Moore & Lehmann, 1980; Srinivasan, 1987). Second, time spent on information search tends to be higher for search than for experience goods and for credence than for search goods (Mitra, Reiss & Capella, 1999). Since investment decisions are high risk and have high credence characteristics, consumers are expected to engage in extensive search activities when making investment decisions.

Consumers may get information from a variety of information sources, including books, journals, the Internet, friends/relatives, expert investors, persons at the workplace or professional financial advisors. Some consumers tend to collect their own information through books, journals, the Internet and/or personal acquaintances, while others are more likely to rely on intermediaries to obtain information. For example, those who have full-service stock brokerage accounts tend to obtain information by asking advice or questions from their brokers.

Even though numerous studies have investigated consumer information search behavior, the literature, in general, seems to have developed without much distinction between intangible goods and tangible goods. Most studies have empirically investigated tangible goods, but few have focused on intangible goods, such as credit (Chang &

Hanna, 1992; Lee & Hogarth, 2000a, 2000b). Therefore, our understanding of consumer information search regarding investments is very limited both conceptually and empirically. Two questions are unanswered. One is whether consumers' information search behavior when making investment decisions is similar to that when purchasing tangible goods. Another is whether consumers' information search behavior when making investment decisions is affected by the same factors that influence information search when the purchase is tangible goods.

The purpose of this study is to better understand the nature of investment decisions as well as consumers' information search behavior when making investment decisions. Specifically, this study will identify the factors that will affect consumers' information search for investments and the factors that will affect consumers' choice of information sources. Empirically the relationships between these factors and consumers' information search behavior will be investigated using data from 2000-01 MacroMonitor, which is a comprehensive database of consumer attitudes, behaviors and motivations in terms of financial products.

This study is based on Schmidt and Spreng's (1996) model, which incorporated three major theoretical streams of consumer information search literature: the economics approach, the psychological/motivation approach, and the consumer information processing approach, as noted by Srinivasan (1990). According to Schmidt and Spreng (1996), consumers' motivation and ability to search, as well as the costs and the benefits of searching for information, are mediators between the antecedents and consumers' information search.

Based on a review of the literature on consumer information search, the following factors are identified as influencing consumers' information search: investment-specific individual differences, personal traits, and demographic characteristics. Specifically, investment-specific individual differences include individuals' subjective knowledge, perceived risk and the dollar amount of investments. Personal traits include inherent novelty seeking and attitudes toward risk. Consumers' demographic characteristics include age, education, and income level. Consumers' choice of information sources is expected to be affected by their subjective knowledge and income level.

On the basis of Schmidt and Spreng's (1996) model, consumers' information search behavior when making investment decisions depends on their motivation to search and their ability to search, both of which are further affected by the above antecedents. The perceived costs and benefits of search are hypothesized to determine a consumer's motivation to search, while ability to search is influenced by a consumer's subjective knowledge, education, and age. Furthermore, investment-specific individual differences (i.e. subjective knowledge, perceived risk and the amount of investment) and personal traits (i.e. inherent novelty seeking and attitudes toward risk) are expected to affect a consumer's perceived benefits of search for information. A consumer's subjective knowledge and income level are proposed to exert influence on his/her perceived costs of search.

A set of hypotheses is developed based on the literature and empirically examined using data from 2000-01 MacroMonitor. However, because of the unavailability of data in the secondary dataset for the variables motivation to search, ability to search, perceived benefits, perceived costs and perceived risk, hypotheses associated with these

variables are not included in the empirical analysis. Therefore, the theoretical mechanism between consumers' information search and the antecedents through mediators remains conceptual.

By identifying the factors influencing consumer information search behavior when making investment decisions, this study will contribute to the limited literature on consumer information search for intangible goods, especially for investment products. This study also recognizes the difference among information sources and investigates the factors that influence investors' choice of different information sources. The findings of this study will also provide insights for marketers of investment products and services. They could find their target clients and better meet their customers' needs by understanding consumers' characteristics and how they search for information about investments. Finally, consumer educators and financial planners and counselors could get insights on how to help consumers with their investment decision-making.

CHAPTER 2

LITERATURE REVIEW

This chapter consists of a review of the literature on investment decisions and consumer information search. It starts with a discussion of the nature of investment decision-making. Then, theoretical frameworks are developed from the review of different conceptual approaches to consumer information search. Three major paradigms of consumer information search are introduced. A model of information search when making investment decisions is developed based on the literature review and presented with a set of hypotheses in the following chapter.

Investment Decisions: The Nature of Decision-Making

Future consumption

According to economic utility theory, an individual's investment decision is viewed as a choice of the tradeoffs between immediate consumption and deferred consumption (Neumann & Morgenstern, 1947). Nagy and Obenberger (1994) stated that investment decisions are made on the basis of a comparison of the benefits derived from immediate consumption versus the benefits yielded by investments. Immediate consumption refers to the process by which consumers purchase goods and services today to meet their various needs, and benefit or satisfaction is derived directly from the consuming process. The benefits of deferred consumption are the returns to the investment products that consumers purchase.

The difference between the utility functions for investment products and other goods results in a difference between the decision-making processes for investments and for other goods and services. When searching for a good or service, consumers tend to compare the good or service with their needs and preferences. For example, a consumer buys coffee in order to meet his/her need for a beverage and will choose a brand that is consistent with his/her taste. On the other hand, the choice of an investment is dependent upon the expected volume of the monetary returns. The money returns of the investments cannot yield direct utility to consumers unless consumers spend the money to consume goods and services.

Intangibility

Intangibility is one of the traditional cues that differentiate services from goods. Hill (1999) argued that this distinction between goods and services is erroneous and confusing and should be replaced by a new taxonomy consisting of tangible goods, intangible goods and services. As entities of economic value, goods have the following characteristics: they exist independently of their producers and consumers, their ownership rights can be established, they are exchangeable, and production and trading of goods can be conducted at different times and locations. On the other hand, the production and consumption of services cannot be separated, and the production of services must be done with the agreement, cooperation and participation of the purchasers.

Furthermore, Hill (1999) maintained a distinction between tangible goods and intangible goods. Intangible goods have all of the economic characteristics of goods, which distinguish them from services even though services also have intangible qualities.

While compared to tangible goods, intangible goods are entities that exist non-physically and have to be recorded and stored on physical media.

Investment products should be classified as goods, not services. Investment products possess all of the characteristics of goods. They have economic value, which is measured by market prices. The investor obtains exclusive ownership rights of investment products once he/she purchases the products and the investment products are independent entities that can be exchanged among investors at different places and times.

Furthermore, investment products are intangible goods. What investors purchase is the ownership rights to reap the investment return, which cannot be seen, felt, tasted or touched in the same manner that tangible goods can be sensed. The certificates of investment that investors physically hold are just the medium that records and stores the rights.

Uncertainty

Keynes (1976) noted that uncertainty about the future return of some investments is inevitable, since the utility of a trader's commitment depends on unknown states of the environment in the financial markets. Fishburn (1988) stated that decision-making under uncertainty refers to decisions, which yield outcomes related to uncertain events with unknown probability. The values of investment products are dependent upon many future events (Arrow, 1988) with unknown probability in advance; investors will not be certain about the actual results until they sell the investment products. To make decisions, investors have to form expectations about the unknown realization of market outcomes (Strassl, 1986). Research has demonstrated that investors often base investment decisions on the products' prior performance (Moore, Kurtzberg, Fox, & Bazerman, 1999; Sirri &

Tufano, 1998). However, research on whether an investment's historical performance can predict its future performance has reached contradictory conclusions (Sirri & Tufano, 1998). Moreover, in a hypothetical experience, Moore et al. (1999) found that most participants consistently overestimated both the future and past performances of their investments.

<u>Perceived risk</u>

Perceived risk represents consumers' uncertainty about the purchase decisions and the consequences of unfavorable purchases (Bettman, 1973; Cunningham, 1967a; Derbaix, 1983; Mitra, Reiss, & Capela, 1999; Schiffman, 1972). In the literature, the types of risks perceived by consumers are: financial risk, performance risk, physical risk, social risk and psychological risk (Jacoby & Kaplan, 1972; Kaplan, Jacoby, & Szybillo, 1974).

When purchasing investment products, consumers may bear greater risk than when buying other goods. First, the financial risk in terms of investments has two dimensions. The investment generally involves a relatively large amount of money. According to the Survey of Consumer Finances, the total value of households' stockholdings was about 35% of the households' total assets and almost equal to the total value of residential property at the end of 1998 (Bertaut & Starr-McCluer, 2000). The consequence of a "bad" investment will cost the investor a lot. Meanwhile, the financial risk should also take into account the opportunity cost, which includes the return to an alternative investment as well as the time and money involved with the investment.

Second, the performance of investment products actually refers to the performance of the producers of the investment products. Investing is well known as a risky activity, because the value of the investments is always changing along with the performance and

prospective of the economic institution, which is further influenced by micro-economic factors inside and macro-economic factors outside. Keeble (2001) suggested that without help to make and carry out a significant investment decision most people would make such decisions in the dark because they "do not have the time, training, talent and temperament to do their own investing" (p.123). Sirri and Tufano (1998) also suggested that most retail investors lacked formal training and that few investors had up-to-date information about the potential investment.

Third, for most investors, if an investment ends up in a loss, they must endure a large amount of social and psychological pressure. The social risk tends to be greater for a significant investment. A significant investment loss could result in the loss of social status. Psychologically, investors often worry about the risks associated with the investment and must deal with the frustration of a loss.

<div align="center">Theoretical Frameworks</div>

Srinivasan (1990) noted that there are three major theoretical streams in the literature of consumer information search: the economic, the psychological and the information processing approach. In this section, each of the approaches is introduced, and previous research devoted to integrating the different approaches is discussed.

<u>Economic approach</u>

The economic approach attempts to understand why consumers engage in information search activities in terms of the costs and benefits of search. This framework has been prevalent in the information search literature since Stigler's (1961) seminal article on the economics of information. Utility maximization and imperfect information are two important assumptions in the economics of information theory. According to Stigler,

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rational consumers always try to maximize utility; however, it is impossible for them to know about all of the prices at a given time due to constant changes in market prices. Thus, consumers tend to search among various sellers for a favorable price in a market with price dispersion.

Theoretically, increased search results in diminishing returns, which is indicated by a reduced expected minimum price. Therefore, the optimal amount of search that a consumer will engage in is determined by the marginal cost of search and the marginal return of search. The basic idea of the economics of information search remains intact even though Stigler's model has been refined in different dimensions by a number of researchers (Butters, 1977; Kohn & Shavell, 1974; Ratchford, 1982; Rothschild, 1973; Salop, 1976; Stiglitz, 1979; Telser, 1973; Weitzman, 1979).

The fundamental implication of the economic perspective is that search for information is negatively related to the costs of search and positively related to the benefits of search. The trade-off between the costs and benefits of search helps one to understand differences in consumers' information behavior by its parsimony and intuitive appeal (Srinivasan, 1990).

Gutman (1982) and Olshavsky and Wymer (1995) defined the benefits of search as outcomes that increase one's utility or provide value by facilitating achievement of a higher level of goals or values. The benefits of search could be obtaining products with lower prices or better style/appearance or higher quality, or increased satisfaction with the products and/or decisions (Bettman, 1979; Punj & Staelin, 1983). Another major benefit of search for information is the reduction of risk (Bauer, 1960; Bennett & Harrel, 1975; Howard & Sheth, 1969). Studies have found a positive relationship between

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perceived benefits of search and search activities (Duncan & Olshavsky, 1982; Srinivasan & Ratchford, 1991). For investments, the benefits of search for information include purchasing products with lower costs and/or with better appreciation potential that enable a higher potential return, a reduction in the risk, increased satisfaction with the decision and accumulation of investment knowledge that contributes to one's stored knowledge. As proposed by Schmidt and Spreng (1996), perceived benefits will positively affect the motivation to search.

The construct of cost of search refers to what consumers must sacrifice to obtain and process information (Bloom, 1989; Russo, 1988; Russo & Leclerc, 1991; Sepstrup 1980), including direct costs and indirect costs. The direct costs of search are the monetary expenditure, time sacrifice, physical effort and psychological sacrifice (Bettman, 1979). The indirect cost is the opportunity cost or the expected utility of the alternative use of time. Many costs are associated with search for investment decisions. For example, do-it-yourself investors must purchase informational materials and spend a lot of time observing market changes, while consumers who are customers of financial advisors must pay for the services they obtain.

Perceived costs of search will negatively affect the motivation to search (Bettman, 1979; Farley, 1964; Stigler, 1961). Empirically, Punj and Staelin (1983) as well as Srinivasan (1986) found that information search decreased with increased costs. In this study, consumers' subjective knowledge and income levels are identified to affect their perceived costs of search and therefore their information search behavior.

<u>Psychological approach</u>

The psychological approach was dominant in the literature of marketing and consumer behavior, especially in empirical research in the 1970s and 1980s. From a psychological perspective, determinants of consumers' information search behavior have been identified, including individual characteristics (e.g., personality traits), types of product (e.g., durable versus non-durable goods), and task-related variables (e.g., importance of product and time pressure). The psychological approach is rooted in Howard and Sheth's (1969) motivational approach, which posited that attention, which is regulated by the stimulus ambiguity-arousal relationship, is the motivational basis of search. A buyer uses attention as the first source of control to meet the information requirements within the limitation of the stimuli to which he/she is exposed. He/she will be motivated to engage in overt search, that is, the second method of control, when the first source is not adequate. Stimulus ambiguity elicits arousal, which activates external search until a buyer obtains necessary information to make a decision.

Thus, motivation is the key component in the psychological paradigm. Motivation is the desire to expend effort on a task, influencing both the direction and intensity of the behavior (Bettman, 1979). According to Simon (1967), motivation is the mechanism that governs the movement from one state to a desired end state. Within this motivation context, Engel, Kollat and Blackwell (1972) conceptualized information search as a part of the decision process, which moves a consumer from the problem recognition state to the decision-making state. Schiffman and Kanuk (1983) suggested that motivation is the result of a state of tension produced by unfilled needs and that it acts as a driving force that impels a person to action. They noted that motivation can either be positive or

negative, representing a driving force toward or away from a state of conditions. In this tradition, researchers viewed motivation as the driving force for consumers to engage in search activities (Burnkrant, 1976; Hansen, 1972; Howard, 1977; Howard & Sheth, 1969; Nicosia, 1966).

Motivation can stem from multiple directions. First, motivation can come from one's goal-orientation, which differentiates optimizers from satisfiers (Srinivasan, 1990; Swan, 1969; Wright, 1975). The "conservation utility" (Srinivasan, 1990, p. 171), a switch-point at which a consumer decides whether or not to continue searching, is higher for optimizers than for satisfiers. Thus, an optimizer tends to do a more thorough search than a satisfier.

Second, motivation can come from a consumer's involvement with a particular product, which implies perceived importance (Bloch & Richins, 1983). Greater involvement with a product indicates greater motivation to search for information related to that particular product (Beatty & Smith, 1987; Schmidt & Spreng, 1996).

Howard (1977) suggested that epistemic pleasure and willingness to subject oneself to cognitive strain also influence motivation. That is, motivation is rooted in the relationship between stimulus ambiguity and arousal, and the tolerance for ambiguity varies across individuals.

Furthermore, perceived benefits and costs of information search, the two major components in the economics approach, also provide motivation for search (Srinivasan, 1987, 1990; Schmidt & Spreng, 1996). In this sense, the psychological paradigm is a more general approach, because it seeks to understand the varieties in consumers' information search behavior beyond the cost-benefit analysis but still incorporates the

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economic perspective. An advantage of the combination of the psychological and economic perspectives is that "the behavioral theory can be given an economic interpretation, and the economic theory be enriched by relating it to empirical findings in the behavioral literature" (Moorthy, Ratchford & Talukdar, 1997, p. 264).

Schmidt and Spreng (1996) defined motivation as the desire to expend effort on information collection and procession, involving both direction and intensity. This study conceptualized motivation as the desire to expend effort in gathering and processing information for investment products, which affects what types of external sources investors use and how much they search (the extent of search). Note that the motivation to search refers to the positive direction, which means an action toward information search.

Information processing approach

The information processing approach has evolved from the psychological viewpoint, but focuses exclusively on the role of memory and the limitation in human information processing capacity (Bettman, 1979; Schmidt & Spreng, 1996; Srinivasan, 1990; Sternthal & Craig, 1982). Using this approach, information search is divided into internal search and external search. External search is "the degree of attention, perception and effort directed toward obtaining environmental data or information related to the specific purchase under consideration" (Beatty & Smith, 1987, p. 85). Internal search refers to the process by which a consumer recalls what has already been stored in the memory (Schmidt & Spreng, 1996).

While Bettman (1979) posited that an internal search is usually performed initially, followed by external search if there is insufficient information in memory to make a

decision, Srinivasan (1990) suggested that internal and external search may be intertwined. A consumer may perform internal search first, jump to external search when encountering a lack of information or a conflict, but will resume the internal search again. This alternation process will continue until sufficient information is obtained to make a decision.

In the information processing literature, ability to search is a determinant of consumers' information search (Bettman, 1979; Bettman & Park, 1980; Petty & Cacioppo, 1986). Schmidt and Spreng (1996) defined perceived ability to search as "the perceived cognitive capacity of searching for and processing information" (p. 248). They specified that the ability to search involves cognitive processing ability, knowledge of how to search for information and knowledge of where to search for information (Brucks, 1985; MacInnis, Moorman, and Jaworski, 1991). In this study, consumers' perceived ability to search refers to consumers' ability to choose appropriate information sources, their ability to gather useful information and their ability to understand and remember the information.

In the literature, prior knowledge, experience and familiarity have been conceptualized, which imply one's ability to search for information. Prior information stored in the memory has an effect on external search by the allocation of attentional capacity to the information (Lynch & Srull, 1982) and by the cognitive effort of processing new information (Johnson & Russo, 1984; Srinivasan, 1990).

According to Bettman and Park (1980), the extent of information search depends on one's motivation and one's ability to search and higher ability induces increased information search activities. Empirically, consumers' ability is positively related to

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information search (Srinivasan, 1987). In purchasing televisions, the perceived ability to judge products and brands had a positive effect on consumers' information search (Duncan and Olshavsky, 1982). In this study, one's subjective knowledge, educational attainment and age are believed to influence one's ability to search.

The information processing capacity constraints inherent in humans is the other emphasis of the information-processing viewpoint. Miller (1956) stated that "the span of absolute judgment and the span of immediate memory impose severe limitations on the amount of information that we are able to receive, process and remember" (p. 85). It is not realistic or tenable for an individual to process an unlimited amount of information (Wilkie, 1972). Bettman (1979) suggested that the limited capacity has to be allocated, and that simplifying heuristics have to be used to reduce the amount of information processed. Therefore, the information processing limitations provide at least a partial explanation for individual differences in external information search (Srinivasan, 1990).

In sum, the three approaches contribute to our understanding of the varieties in consumers' information search behavior from different perspectives. The approaches are complementary rather than competing. However, a majority of the previous studies on information search were conducted on the basis of one or even two approaches. A notable exception is Schmidt and Spreng (1996), who proposed a comprehensive model of information search that incorporated all three approaches.

In Schmidt and Spreng's (1996) model, information search is determined by motivation and perceived ability to search, and perceived benefits and costs are proposed to affect motivation to search. They defined motivation, perceived ability to search and perceived benefits and costs as follows. Motivation to search referred to the desire to

expend effort to collect and process information. Perceived ability to search was defined as the perceived cognitive capability of searching for and processing information, which involves processing ability as well as knowledge about how and where to search for information (Brucks, 1985; MacInnis, Moorman, & Jaworski, 1991). Perceived benefits of search were defined as the increased utility or values that could facilitate achievement of higher-level goals or values (Gutman, 1982; Olshavsky & Wymer, 1995). Perceived costs included perceived money expenditure, time, physical effort and psychological sacrifice as stated by Bettman (1979).

Schmidt and Spreng's (1996) model extended previous literature by bringing together the economic approach, the psychological approach and the information processing approach. Furthermore, their model allowed some variables, such as knowledge, to exert multiple effects on information search through different mediators. This approach increases our understanding of the effects of the variables exerting multiple effects.

CHAPTER 3

A MODEL OF INFORMATION SEARCH WHEN MAKING INVESTMENT

DECISIONS

Based on Schmidt and Spreng's (1996) model, this study establishes a model of consumer information search for investment products (Figure 1). The model proposes that consumers' information search for investment products is influenced by investment-specific individual differences, personal traits and demographic characteristics. In particular, investment-specific individual differences are consumers' subjective knowledge of investments, perceived risk, and the amount of the investments. Personal traits include consumers' inherent novelty seeking and their attitudes toward investment risk. Demographic characteristics are age, education and income. Conceptually, the effects of the above antecedents on consumers' information search are mediated by consumers' perceived benefits and costs of search and their motivation and ability to search. The hypothesized relationships of these variables will be discussed in detail in the following section on hypothesis development.

Consumer information search behavior can be described in terms of three fundamental behaviors: from which sources consumers search information, how much information consumers search, and how consumers search for information. In the literature, the three aspects are generally conceptualized as consumer information search sources, extent, and strategies/patterns. This study investigates consumers' information

search behavior in terms of the extent of information search and the information sources used.

<u>Extent of information search</u>

Among the three fundamental questions about consumer information search behavior, the extent of information search receives the most attention in the literature. Most of the previous search literature defined search as "the degree of attention, perception, and effort directed toward obtaining environmental data or information related to the specific purchase under consideration" (Beatty and Smith, 1987, p. 85). However, Schmidt and Spreng (1996) argued that information obtained independent of a specific imminent purchase, defined as "ongoing search" by Bloch, Sherrell, & Ridgway (1986, p. 120), should also be included to form a more comprehensive model. Ongoing search is different from prepurchase search, which refers to information search activities and processing that facilitate decision-making about a specific purchase (Kelly, 1968). These two types of search are differentiated on the basis of the purposes of the search - whether or not the search will lead to a purchase decision.

Even though the differentiation is conceptually useful, it is very difficult in practice (Bloch, Sherrell, & Ridgway, 1986). For example, an outside observer is not able to distinguish the activities involved in these two types of search. Moreover, rather than a specific purchase consideration, hedonic value may be a major goal of the shopping behavior for some consumers (Babin, Darden, & Griffin, 1994). The information that a consumer accumulated in previous search could greatly affect his/her future information search behavior through the role of knowledge.

With regard to investment products, a sophisticated investor typically tracks an investment product for quite a long time, accumulating a lot of information before making a purchase decision. The search activity is a prolonged process instead of a temporary action. Therefore, it is hard to distinguish ongoing search from prepurchase search for investments. Therefore, in this study, the extent of search is defined as the degree of attention, perception, and effort direct toward obtaining information associated with investment products and investment markets, regardless of whether the search is related to a purchase consideration.

<u>Sources of information</u>

As discussed earlier, sources of information can be categorized as internal and external (Beales, Mazis, Salop, & Staelin, 1981; Moore & Lehmann, 1980). Internal sources refer to a consumer's memory where information that was accumulated from previous searches, experience with the products or passively acquired information during daily routine has been stored and from which it can be retrieved (Archibald, Haulman & Moody, 1983; Beales, Mazis, Salop, & Staelin, 1981; Punj & Staelin, 1983). External sources include salespersons, friends and relatives, expert consumers, books, magazines, newspapers, TV advertisements, radio programs, government and independent rating agencies and in-store displays. Search from internal sources is the so-called "internal search" (Beales, Mazis, Salop, & Staelin, 1981; Beatty & Smith, 1987; Bettman, 1979; Moore & Lehmann, 1980), which is difficult to directly investigate (Moore & Lehmann, 1980; Nisbett & Wilson, 1977). Thus, this study will focus on consumer search for information from external sources.

Substantial research has attempted to categorize external information sources. It appears that the classification of information sources is made on the basis of where the information comes from and/or who provides the information. Claxton, Fry and Portis (1974) divided external sources into in-store and out-of-store sources. According to Capon and Lutz (1979), external sources include independent (e.g. various agencies and levels of government, independent rating agencies and organizations that certify the quality of products), commercial (e.g. manufacturers, retailers and trade associations), and consumer-oriented (e.g. friends, relatives, and neighbors) information sources. Beales, Mazis, Salop, & Staelin (1981) categorized external sources as neutral sources, seller-controlled sources and direct inspection. At the same time, Kiel and Layton's (1981) classification includes retail, media and personal. Beatty and Smith (1987) expanded Kiel and Layton's classification to include neutral sources. Most recently, Schmidt and Spreng (1996) divided information sources into five groups: marketer-controlled (e.g., personal selling, advertising, product information on package, product brochures), reseller information (e.g., catalogs by reseller, information charts and consultants), third party, personal and direct inspection.

It is important to note that most of the previous studies on sources of information are related to information search for tangible goods. With respect to investment products, information sources and its classification need more attention. Most importantly, in addition to the traditional sources, such as books, TV, radio, friends/relatives, sales persons, and third parties, the Internet and professional financial services providers are prevalent sources of investment information.

A number of researchers have documented the significance of personal sources in

diffusing market information and influencing consumer choices (Childers & Rao, 1992;

Higie, Feick, & Price, 1987; Price, Feick, & Higie, 1987). Research has demonstrated

that consumers frequently name information from personal sources in describing their

search efforts and identify it as particularly influential in consumer decision-making (Kiel

& Layton, 1981; Murray, 1991; Newman, 1977; Price & Feick, 1984; Yale & Gilly,

1995). Personal sources include professional financial services providers (brokers,

financial planners, and other professionals), friends/relatives, experienced investors, and

third party agents. Among the personal sources, there is a fundamental difference

between professional financial services providers and other personal sources. Consumers

must pay for the advice they obtain from financial professionals either by fees or

commissions that are typically high while advice from other personal sources has no

monetary cost. The usefulness of the information from various sources may vary. For

example, information from a financial professional may be objective and up-to-date,

while information from friends and family may be obsolete, and information from

experienced investors may be biased (Morgan, 1988). On the other hand, friends and

relatives may provide advice on products more suitable for a consumer because they tend

to know his/her preference better than others. Another difference between financial

services providers and other personal sources is that the latter may be more time-

consuming to use than the former. Thus, it is important to differentiate professional

financial services providers from other personal sources of information. Interpersonal

communication is believed to convey richer information than written communication

because interpersonal conversation involves direct communication between

communicating parties and many visual cues. Therefore, this study also maintains the distinction between personal sources and impersonal sources.

Impersonal sources include written material (e.g. books, brochures, reports, magazines), media (e.g. TV, radio programs), and the Internet. The Internet has been identified as the "latest super-diffusion technology" because of its dramatic growth and global scope as a communication medium (Dickson, 2000; Ratchford, Lee & Talukdar, 2001). It has become a very important source of information for consumers because the Internet has many distinct advantages. A huge amount of information is widely available on the Internet, and the information is updated frequently and quickly. Search from the Internet is fast and costless. The cost of search from the Internet is less than searching in the store (Lal & Sarvary, 1999). Thus, this study classifies impersonal sources as written material, media and the Internet. On the other hand, impersonal sources are somewhat similar to each other for investment products as there are strict regulations on information disclosure and investors tend to search for information from impersonal sources independent of the influence of other people. In sum, in this study the sources of information that are used during external search are classified into five categories: literature, media, the Internet, friends/family and professional financial services providers.

<center>Hypotheses Development</center>

This study incorporates the economic, psychological and information processing approaches and proposes that consumers' information search for investment products is influenced by investment-specific individual differences, personal traits and demographic characteristics.

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<u>Subjective knowledge</u>

As discussed earlier, an individual's memory acts as an internal source of information from which prior knowledge can be retrieved and used in the external search. Beatty and Smith (1987) defined product class knowledge as "the individual's perceived knowledge and understanding of products within a particular product class and it includes experience with the product" (p. 88). They found a negative relationship between consumers' product class knowledge and the total search effort across product categories.

In studying consumer information search behavior for new automobiles, Punj and Staelin (1983) distinguished prior knowledge into two components: directly relevant knowledge and general knowledge that could facilitate comprehending new information. The authors found that directly relevant knowledge decreased the consumer's benefit/need for external search. Ratchford (2001) treated consumer knowledge as human capital, which affects information search activities in different ways. He suggested that consumers' prior knowledge about product attributes and prices of alternatives could still be used and led to reduced search; instead consumers may adopt other strategies, such as brand loyalty, to make purchasing decisions.

While product knowledge was often treated as a single construct in past studies, recent research has differentiated between objective knowledge and subjective knowledge (Brucks, 1985; Park, Mothersbaugh & Feick, 1994; Schmidt & Spreng, 1996; Spreng & Olshavsky, 1990). Specifically, objective knowledge is defined as what consumers actually know about a product, while subjective knowledge refers to a consumer's self-assessment of his/her knowledge about a product. The two concepts are highly related but different (Brucks, 1985). It is subjective knowledge rather than

objective that is the basis of consumers' decisions. Presumably, if a consumer could accurately assess the product knowledge he/she has, there is no need to distinguish between objective and subjective knowledge, because the effects are the same. However, high levels of calibration (matching between subjective knowledge and objective knowledge) are achieved rarely while the norm is moderate levels of calibration with some degree of systematic bias (Alba & Hutchinson, 2000). Therefore, it is realistic to maintain a distinction between objective and subjective knowledge.

In the literature, product-related experience has been used as another way to operationalize prior knowledge, although this approach has been criticized by some researchers (Brucks, 1985; Spreng and Olshavsky, 1990). Specified as a distinct construct, experience has a more strong effect on subjective knowledge than on objective knowledge (Park, Mothersbaugh, & Feick, 1994). Consistent with Schmidt and Spreng's (1996) model, this study will not specify experience as a distinct construct. Instead, the effect of experience on information search is assumed to be indirect through its effect on objective and subjective knowledge. Since only consumers' subjective knowledge is hypothesized in this study to influence information search for investments, a consumer's prior experience is assumed to influence his/her self-assessment about knowledge in investments and further affect information search behavior.

Confidence and subjective knowledge are also very closely related constructs. Brucks (1985) suggested that subjective knowledge often includes both knowledge and confidence in the adequacy of one's knowledge level. Duncan and Olshavsky (1982) indicated that a high level of subjective knowledge means that the consumer has confidence in his/her ability to search for information. Therefore, a consumer's subjective

knowledge also reflects his/her confidence level in his/her investment knowledge to conduct investing.

This study focuses on subjective knowledge, because it is believed that a consumer's decision about whether more information is needed is based on his/her self-assessment of knowledge instead of objective knowledge itself. According to Johnson and Russo (1984), more information will not be acquired when a consumer believes that he/she knows a lot about a product and has enough knowledge to make a decision. Brucks (1985) found that increased subjective knowledge led to a decreased usage of salespersons' recommendations. Urbany, Dickson and Wilkie (1989) found that consumers with a high level of subjective knowledge regarding which brand to buy searched less. It appears that an increase in subjective knowledge reduces the perceived return from search. A consumer's knowledge consists of the product-class (i.e. investment products) knowledge and the knowledge of how to make investment transactions. Therefore, the following hypothesis will be examined:

H1.1: Consumers with a higher level of subjective knowledge engage in less external search for information about investments than those with a lower level of subjective knowledge about investments.

On the other hand, Schmidt and Spreng (1996) proposed that a consumer's self-assessment of one's knowledge would affect one's perceived costs of search since the search will seem easier if he/she thinks himself/herself to be knowledgeable. Knowledge reduces cognitive processing costs and facilitates search in that only important or diagnostic information will be processed (Alba & Hutchinson, 1987; Bettman & Park, 1980; Brucks, 1985; Johnson & Russo, 1984). Ratchford (2001) suggested that the cost of

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search will be reduced by learning how to search, which he described as "skill capital", accumulated in past search experience; as a result of the reduced costs, the extent of current search will increase. In addition, one of the main reasons that consumers choose professional services providers over other information sources may be that consumers are not confident with their own knowledge and ability to process new information and make investment transactions (i.e. buy stocks, bonds, or mutual funds). As their subjective knowledge increases, it would be expected that consumers would be more likely to search independently through the literature, the media and the Internet, all sources that have lower money costs than professional services. Consequently, the following hypotheses are developed as:

H1.2a: Consumers with a higher level of subjective knowledge engage in a higher extent of search for information about investment products than those with a lower level of subjective knowledge.

H1.2b: Consumers with a higher level of subjective knowledge are more likely to search for information about investment products from literature than those with a lower level of subjective knowledge.

H1.2c: Consumers with a higher level of subjective knowledge are more likely to search for information about investment products from media than those with a lower level of subjective knowledge.

H1.2d: Consumers with a higher level of subjective knowledge are more likely to search for information about investment products from the Internet than those with a lower level of subjective knowledge.

H1.2e: Consumers with a higher level of subjective knowledge are less likely to

     search for information about investment products from friends or family

     members than those with a lower level of subjective knowledge.

H1.2f: Consumers with a higher level of subjective knowledge are less likely to

     search for information about investment products from professional services

     providers than those with a lower level of subjective knowledge.

Brucks (1985) suggested that subjective knowledge includes both knowledge and confidence in the adequacy of one's knowledge level. According to Chase and Simon (1973), a high level of knowledge indicates a well-developed knowledge structure as well as the ability to comprehend and organize information easily. Consequently, a consumer with a higher level of knowledge will process new information easier than the one with a lower level of knowledge. Duncan and Olshavsky (1982) noted that high subjective knowledge indicates confidence in one's ability to perform product-related tasks, including information search. Therefore, it is proposed that a consumer with a high level of subjective knowledge possesses confidence in his/her knowledge and ability to conduct investment activities. The following hypothesis will be examined:

H1.3: Consumers with a higher level of subjective knowledge engage in more

     information search for investment products than those with a lower level of

     subjective knowledge.

Perceived risk

Similar to subjective knowledge, perceived risk is the consumer's assessment of the level of risk he/she faces in making the purchase decision. It includes multiple components: performance risk, financial risk, social risk, physical risk, and psychological

risk (Jacoby & Kaplan, 1972; Kaplan, Jacoby, & Szybillo, 1974). Investing has long been known as risky and complicated due to its distinct characteristics, as discussed earlier.

Bauer (1960) first described information search as a strategy of risk reduction in the face of risk. According to Cox (1967), "amount and nature of perceived risk will define consumers' information needs, and consumers will seek out sources, types, and amounts of information that seem most likely to satisfy their particular information needs" (p. 604). Bauer (1960) and Bennett and Harrel (1975) as well as Howard and Sheth (1969) also found that reduction of risk is a major benefit of information search. In the literature, there is a consensus, both conceptually and empirically, that a higher level of perceived risk in a prepurchase context increases consumers' propensity to seek information about a product or service (Dowling and Staelin, 1994). This is because the greater the uncertainty about the payoffs from alternatives, the greater the returns to search (Srinivasan and Ratchford, 1991).

Among different types of information sources, word-of-mouth and other personal sources of information have been viewed as more effective means of reducing risk than other sources (Arndt, 1967; Cunningham, 1967b; Cox, 1967; Lutz & Reilly, 1973; Mitra, Reiss & Capella, 1999; Murray, 1991). Consumers are more likely to seek information through direct observation and experience for high-risk products or services (Lutz & Reilly, 1973). According to Mitra Reiss and Capella (1999), consumers always prefer personal information sources to impersonal sources when faced with the higher risk inherent in credence services compared to experience and search services. Previous studies also found that personal sources are rated as the most important source of information especially when the consumer perceives high risk (Arndt, 1967, 1968;

Cunningham, 1964; Lutz & Reilly, 1973; Perry & Hamm, 1969; Roselius, 1971).

However, as discussed earlier, due to the unavailability of data related to perceived risk,

no hypothesis was developed and empirically tested in this study, calling for a future

study.

Amount of investments

Past research has found that consumers engage in more search when purchasing

goods with higher prices than when prices are lower (Schmidt & Spreng, 1996). There is

a positive relationship between prices and search activities across a variety of products,

including automobiles (Kiel & Layton, 1981), appliances (Newman & Staelin, 1973) and

apparel (Dommermuth, 1965). Udell (1966) found that consumers visit more stores when

purchasing more expensive goods.

In terms of investment products, the amount of the investments is proposed to be a

more appropriate variable than the unit price. An investment typically is considered as a

whole product that consists of multiple units, so that consumers are more likely to see the

amount of the investments as the price for the product rather than the unit price.

Therefore,

H2: The larger the amount of the investments, the greater the extent of consumers'

search for information about investment products is.

Attitudes toward risk

Attitudes toward risk and perceived risk are related, but distinct constructs. Attitudes

toward risks refer to a consumer's risk preference, indicating how risk-averse or risk-

taking a consumer is, while the perceived risk is the assessment of the risk for a particular

decision that one faces. The construct of attitudes toward risk is similar to the concept of

acceptable risk, which is incorporated in Dowling and Staelin's (1994) model. They differentiated between product-category risk and product-specific risk and developed a model with an emphasis on product-specific risk. Specifically, the relationship between perceived risk and the use of extra risk-reducing strategies is moderated by acceptable risk. Only normal risk-reducing activities will be undertaken when the acceptable risk is higher than the level of specific risk, while a higher level of specific risk compared to acceptable risk will induce extra risk-reducing activities.

A more liberal attitude toward risk indicates a higher acceptable level of risk. Presumably, a higher level of acceptable risk will decrease the use of extra risk-reduction activities as long as the perceived risk is lower than the acceptable level. Moreover, in the face of the same risk associated with a particular purchase situation, a consumer with a more conservative attitude toward risk will tend to perceive a higher risk level than a consumer with a more liberal attitude toward risk. The hypothesis regarding the attitudes toward risk is proposed as follows:

H3: Consumers with more liberal attitudes toward risk engage in less search activities for information about investment products than those with more conservative attitudes toward risk.

Inherent novelty seeking

The underlying notion of the construct of inherent novelty seeking is that an individual is motivated to seek out novel information through some internal drive (Acker & McReynolds, 1967; Cattell, 1975; Farley & Farley, 1967). Hirschman (1980) defined inherent novelty seeking as a desire to seek out new and different information and inherent innovativeness as the willingness to adopt new products. These two constructs

are conceptually close if the concept of products is defined more broadly to include ideas, services and goods. Through active information search from different sources, not only can investors find alternative investment products, but they also can accumulate information through "ongoing search" (Bloch, Sherrell & Ridgway, 1986) that can be used in future information search activities. The following hypothesis is posited:

H4: A more innovative consumer engages in more search activities for information about investments because of greater perceived benefits of search.

Income

An important aspect of the cost of search is opportunity cost, which is defined as the expected utility of an alternative use of the time spent in searching for information. Feick, Herrmann and Warland (1986) noted that the marginal wage is the appropriate measure of the opportunity cost. However, the marginal wage is difficult to measure. Since a higher wage rate is generally associated with higher income, income can be used as a proxy for wage. Therefore, it could be posited that a higher income increases the cost of search and discourages search activities.

Marvel (1976) found that income negatively affected search for information about gasoline prices. However, Katona and Mueller (1954) as well as Andreasen and Ratchford (1976) found an inverted-U-shape relationship between income and external search; that is, for the households with income above the median, information seeking declines as incomes increase, but information seeking did not increase for low-income households. Many other empirical findings confirmed a curvilinear relationship between income and information search including studies by Carlson and Gieseke (1983), Ratchford (1988) and Morgan (1988). One might expect lower-income individuals to

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engage in more information search since their opportunity costs are lower than those of individuals with higher income. On the other hand, they may have a lower level of knowledge and consumers with less ability to understand difficult materials therefore may not ask as many questions as consumers with higher incomes (Miyake & Norman, 1979). So the following hypothesis will be examined:

> H5a: Consumers with higher income levels engage in less search activities for information about investment products than those with lower income levels.

Furthermore, searching for information from impersonal sources, such as books and the Internet, or from such personal sources as friends/relatives and experienced consumers, generally requires more time and effort than obtaining information from financial services. Thus, the opportunity cost tends to be higher for people with higher incomes than for those with lower incomes. Therefore,

> H5b: Consumers with higher income levels are less likely to search for information about investment products from literature than those with lower income levels.

> H5c: Consumers with higher income levels are less likely to search for information about investment products from media than those with lower income levels.

> H5d: Consumers with higher income levels are less likely to search for information about investment products from the Internet than those with lower income levels.

> H5e: Consumers with higher income levels are less likely to search for information about investment products from friends or family members than those with lower income levels.

H5f: Consumers with higher income levels are more likely to search for information about investment products from professional services providers than those with lower income levels.

Education

The basic finding in the literature is that a higher level of education leads to increased search activity (Andreasen & Ratchford, 1976; Claxton, Fry & Portis, 1974; Hempel, 1969; Newman & Staelin, 1972; Schaninger & Sciglimpaglia, 1981). Udell (1966) found that people with higher levels of education visited more stores when shopping for appliances than did people with lower levels of education. Engel, Kollat and Blackwell (1973) stated that consumers with a higher level of education were more likely to engage in extended decision-making than consumers with a lower level of education. Kiel and Layton (1981) concluded that several measures of information search for automobile purchases strongly related to consumers' education levels. Schmidt and Spreng (1996) proposed that more education leads to more information search by increasing one's ability to identify, locate and assimilate relevant information. Moreover, people with higher education levels have more knowledge in general. Those who received business-related education will have more general knowledge relevant to investments. Thus, higher education attainment will increase one's subjective knowledge level. Based on the literature, the following hypothesis are developed:

H6: Consumers with higher educational attainment engage in more information search about investment products than those with lower education attainment.

<u>Age</u>

Past research has identified age as an influential factor in consumer information search. After reviewing the literature on age differences and information processing, Phillips and Sternthal (1977) concluded that older consumers were likely to process less information than younger consumers because they were less able to process large amounts of information; however, older consumers were more capable of distinguishing between relevant and irrelevant information. Research has also indicated that older adults remember less product-related information than younger adults (Cole, 1983; Stephens, 1982; Stephens & Warrens, 1984; Ziethaml, 1982). Lehmann and Moore (1980) found in a longitudinal study that consumers' information search activities declined as they became older. Schaninger and Sciglimpaglia (1981) found that a consumer's age negatively affected the extent of their search for information. More recently, Cole and Balasubramanian (1993) found the intensity and accuracy of searching for information decreased for older consumers. Therefore, the effect of age is posited as follows:

H7: Older consumers engage in less information search for investment products than younger investors.

CHAPTER 4

METHODS

Data

Data from the 2000-01 MacroMonitor are used in this study. MacroMonitor is a comprehensive database of consumer attitudes, behaviors and motivations in terms of financial products, conducted by the Consumer Finance Decision section of SRI Consulting Corporation every other year since 1978. The population of interest in this survey was the total population of financial decision-makers of households in the United States. The 2000-01 MacroMonitor consisted of survey responses from 3,759 financial decision-makers nationwide. More information about MacroMonitor can be found at http://future.sri.com/CFD/proposals/2000proposal.pdf.

The participants were recruited via a random-digit-dialing (RDD) sampling frame. The researchers called both listed and unlisted telephone numbers to improve the representativeness of the sample. The sampling method of the survey was a probability sampling method, specifically, a multistage random sampling with two steps. In the first step, a sample of telephone exchanges was selected using stratified disproportionate random sampling. Telephone exchanges where households tend to have higher incomes and assets were oversampled based on the summary statistics of the exchanges. The second step was to select a sample of telephone numbers of households within each telephone exchange using a simple random sampling method. As a result, there were 3,759 respondents in the final survey, of which more than 1,400 households included

respondents with high incomes or assets, i.e. the households had more than $100,000

annual income or had more than $500,000 total assets, excluding their primary residence.

The purpose of this disproportionate sampling was to provide a larger sample of affluent

households and owners of low-incidence products for analysis than would otherwise be

true. Oversampled households were weighted back to represent their correct proportion in

the population. The information from telephone solicitation attempts was used to create

overall parameters for weighting. National and regional parameters came from the most

recent U.S. Census Bureau Current Population Survey.

The researchers made a telephone solicitation first and then sent the questionnaire to

people who agreed to participate in the survey. Along with the questionnaire was a letter

with instructions, an 800 telephone number for any question, a $5.00 incentive, and a

postage-paid return envelope. The respondents were promised an additional $5.00 for

returning the completed questionnaire and an optional confidential analysis of their

responses compared with those of households in the same age, income and life-stage

group. Due to the mix-mode methodology, i.e., telephone solicitation attempts followed

by mail-and-return questionnaire, and especially the confidential analysis of participants'

responses option, the survey achieved a return rate relatively higher than either mail-

questionnaire survey or telephone methodologies individually.

Among the households selected and contacted, around 7,500 households agreed to

participate via telephone calls, and 49% returned their questionnaires. The real response

rate was the ratio of the number of respondents returning completed questionnaires to the

number of financial decision-makers in the households that the researchers initially

successfully contacted. Sample attrition of households in the survey was attributed to two

major factors. One was that there was no one at home after repeated phone calls. Another was that the financial decision-makers in the households were never found even though someone else answered the phone.

This study used all the responses from the sample in the 2000-01 MacroMonitor to investigate U.S. consumers' information search behavior for investments. To some extent, the probability sampling method and a relatively high return rate ensures that the sample represents the population of interest well and that the results are generalizable to all households in the United States. This contributes to the external validity of this study. However, there is still a problem regarding the sample representativeness because the random-digit-dialing method left out consumers in households that do not have a phone. Households without a phone have traditionally been those with very low incomes and assets who tend to purchase few financial products and engage in little search for information. The exclusion of these households from the sample is not random and limits the external validity of this study in terms of generalizing the results to all households in the United States. Nevertheless, since only consumers with higher incomes are likely to be highly interested in investing and searching for information about investments, the limitation to the external validity of this study is not expected to be severe. The results of this study can be generalized to all U.S. households with telephones.

<div align="center">Measurement</div>

<u>Dependent variable</u>

The extent of consumers' information search for investments is the overarching dependent variable in this study, and it is conceptualized as the effort that a consumer devotes to search for information. In the literature, extent of information search has

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received a great deal of attention as researchers have attempted to answer the fundamental question of how much consumers search for information. However, there are conceptual and definitional problems with understanding external information search (Srinivasan, 1990).

Several studies offered different definitions of the amount of external search for information (Bettman, 1979; Engel, Kollat & Miniard, 1986; Hansen, 1972; Howard & Sheth, 1969; Nicosia, 1966). Many researchers have used the number of stores visited as the measurement of the extent of consumers' search for information (Carlson & Gieseke, 1983; Claxton, Fry & Portis, 1975; Duncan & Olshavsky, 1982; Kiel & Layton, 1981; Newman & Lockeman, 1975; Newman & Staelin, 1972; Punj & Staelin, 1983; Srinivasan & Ratchford, 1991; Urbany, 1986; Urbany, Dickson & Wilkie, 1989; Westbrook & Fornell, 1979). Alternatively, a variety of measures of time was used in some studies: time spent at store (Kiel & Layton, 1981; Newman & Lockeman, 1975; Punj & Staelin, 1983), duration of search time (Kiel & Layton, 1981; Newman & Staelin, 1971; Ozanne, Brucks & Grewal, 1992) and deliberation time (Claxton, Fry & Portis, 1974; Kiel & Layton, 1981; Midgley, 1983). In addition, measures of the extent of information search also include the number of brands examined, the number of models examined, the number of product characteristics considered and the number and types of information sources consulted. Typically, each of these measurements is a single item measure. Srinivasan (1990) argued that single measures of external search do not accurately and adequately describe the true degree or amount of external information search because, for example, the number of stores visited focuses on the inter-store search but neglects intra-

store search. In addition, consumers' experience or satisfaction with previous purchases will significantly influence the number of alternatives examined.

Attempts have been made to find a more comprehensive measure of total information search. Some researchers have developed an index by assigning weights to different search efforts (Duncan & Olshavsky, 1982; Newman & Lockeman, 1975; Newman & Staelin, 1972). Another composite measure is the number of various search activities engaged in, which counts all the external sources of information used (Claxton, Fry & Portis, 1974; Duncan & Olshavsky, 1982; Punj & Staelin, 1983; Srinivasan & Ratchford, 1991).

On the other hand, Chaudhuri (2000) employed a 4-item 7-point agree/disagree scale to measure consumers' information search for a variety of products. The items included: "I would search for more information before buying this product", "I would like to read more about this product", "I would ask the opinions of others about this product", and "I would shop around before buying this product".

Following Chaudhuri's (2000) approach, this study measures the extent of consumers' information search based on their responses to the following questions: "How often do you or anyone in your household receive advice before making major household investment decisions?", "I prefer to consult a specialist when making financial decisions", "I like to discuss my financial options before making a decision about them" and "Using my financial institution as a sounding board for ideas about my finances is important to me". The responses to the first item, "How often do you or anyone in your household receive advice before making major household investment decisions?", ranged from "always (1)", "sometimes (2)", "rarely (3)", to "never (4)". The responses to the

other items were coded on a 4-point Likert-type scale ranging from "mostly agree (1)" to "mostly disagree (4)". The responses were recoded as needed to assign a higher score to a consumer with more search for information. An exploratory factor analysis was run to uncover the underlying common factor of these four items and to examine the internal consistency of this measure. Once the reliability of the measure was established, a factor score was used as the extent of information search variable.

Consumers' choice of information sources was another set of dependent variables in this study. The respondents were asked if they searched for information about investments from each of a variety of sources in the last 12 months. As discussed earlier, this study classified the sources into five categories: literature (i.e., books, consumer magazines, other magazines, newspaper articles, financial newsletters, and brochures/written materials), media (i.e., radio programs, broadcast TV programs, educational TV programs, cable TV programs, radio advertisements, TV advertisements, daily newspaper or magazine advertisements, financial newspaper or magazine advertisements), the Internet, friends/relatives and professional financial services providers (i.e., financial institution personnel, financial advisors).

<u>Independent variables</u>

The independent variables in this study include: investment-specific individual differences, personal traits and demographic characteristics. The following variables were identified as investment-specific individual differences: consumers' subjective knowledge about investments, consumers' perceived risk and the amount of the investments.

Subjective knowledge was defined as consumers' self-assessment of the adequacy of their knowledge about investment products and their knowledge of how to invest. Brucks (1985) measured an individual's subjective knowledge about sewing machines and cars by using a two-item seven-point semantic differential scale. The first item asked the respondents to rate their knowledge of sewing machines as compared to the average women's knowledge with one equal to the least knowledgeable and seven meaning the most knowledgeable. The second item asked respondents to describe their familiarity with sewing machines with one referring to not at all familiar and seven meaning extremely familiar.

Similarly, Srinivasan's (1987) measured respondents' subjective knowledge by the following three questions. First, the respondents were asked about their opinions on the following statement: "Compared to the average person, I know a lot about cars." The response was recorded on a seven-point Likert-type scale ranging from "strongly disagree (1)" to "strongly agree (7)".

The second question asked the respondents to use a seven-point semantic differential scale to respond to the following statement: "Please rate your knowledge of cars, compared to the average buyer." The scale was anchored at the lower end by "one of the least knowledgeable (1)" and at the upper end by "one of most knowledgeable (7)".

The third question was also a seven-point semantic differential scale, asking the respondents to "circle one of the numbers below to describe your familiarity with cars." The anchors of this scale were "not at all familiar (1)" and "extremely familiar (7)". Multiple items were used to decrease the consistency bias by eliciting responses through Likert-type and semantic differential scales (Srinivasan, 1987). The score for the variable

of subjective knowledge was the additive sum of the numbers of the three items circled by the respondents.

Following Srinivasan's (1987) measurement, a set of questions was asked to uncover consumers' subjective knowledge about investments in this study. The questions included: "I sometimes feel stupid when I ask questions about financial matters"; "My household knows how to choose the financial products and services that are best for us"; "I consider myself a sophisticated investor"; "I need help selecting savings and investment products that are best suited to meet my financial goals"; "I feel qualified to make my own investment decisions"; and "I do not need advice on investment options". Each response was coded on a 4-point Likert-type scale ranging from "mostly agree (1)" to "mostly disagree (4)". The responses to all of the items, except "I need help selecting savings and investment products that are best suited to meet my financial goals", were recoded to ensure that higher scores would be associated with consumers' higher levels of subjective knowledge about investments. The reliability of this measure was examined using Cronbach's alpha, and each item-to-total correlation was examined to establish the internal consistency.

The amount of the investments was measured as the total dollar amount of the respondents' financial assets, which are total assets minus the value of business, home, other real estate, tangible assets, and owned vehicles.

Consumers' attitudes toward risk and their inherent novelty seeking were identified as personal traits. Attitudes toward risk indicate the risk preference of an individual. Arrow (1965) derived relative (proportional) risk aversion as the measure of attitudes toward risk. A greater proportion of wealth in the form of risky assets as wealth increased

indicates a decreasing relative risk aversion. Based on this conceptualization, Cohn, Lewellen, Lease, and Schlarbaum (1975) and Friend and Blume (1975) empirically investigated the relative risk aversion using different definitions of wealth. Siegel and Hoban (1982) reviewed these two studies and concluded that the ratio of risky assets to net wealth including housing was a better measurement of the relative risk aversion. This operation has been broadly used in recent studies (Bakshi & Chen, 1994; Morin & Suarez, 1983; Schooley & Worden, 1996; Wang & Hanna, 1997).

Attitudinal scale is another type of measurement used to evaluate an individual's risk preference. Moorthy, Ratchford and Talukdar (1997) adopted a four-item seven-point Likert scale to measure a consumer's attitude toward the risk of making a wrong brand or dealer choice. For example, respondents were asked about their response to the statement: "When I buy a car, it is not a big deal if I buy the wrong model by mistake". Hawley and Fujii (1994) divided an individual's preference for financial risk into four levels: not willing to take any financial risk; willing to take average financial risks expecting to earn average returns; willing to take above-average financial risks expecting to earn above-average returns; willing to take substantial financial risk expecting to earn substantial returns.

An attitudinal scale was adopted in this study to measure respondents' attitudes toward risk. First, respondents were asked where they would prefer to put most of their household's savings and investments. Their responses ranged from 1 (a very low return with a very low risk of loss) to 5 (a very high return with a very high risk of loss). Second, respondents were asked about their opinions on a set of four statements: "It's very important to me to have both a guaranteed interest rate and a federal insurance on

my savings", "I am willing to accept some risk of losing money if an investment is likely to come out ahead of inflation in the long run", "It is wise to put some portion of savings in uninsured investments to get a high yield", and "I am willing to take substantial risks to realize substantial financial gains from investments". Responses to these four statements were measured on a four-point Likert-type scale, ranging from "mostly agree (1)" to "mostly disagree (4)". To give a higher score to respondents who were more risk-liberal, the responses to the last three items, "I am willing to accept some risk of losing money if an investment is likely to come out ahead of inflation in the long run", "It is wise to put some portion of savings in uninsured investments to get a high yield", and "I am willing to take substantial risks to realize substantial financial gains from investments", were recoded.

Inherent novelty seeking is defined as the desire to adopt new products and/or seek out new and different information. To measure respondents' inherent novelty seeking, Hirschman (1980) suggested that questions about an individual's willingness to seek information that is new and different should be asked, and the questions should include both generalized/abstract questions (e.g., "How willing are you to seek out novel information?" or "Do you search for new and different?") and specific/concrete questions related to broad consumption domains (e.g., "How willing are you to try new fashion" or "Do you look for new foods to eat?").

A set of questions was asked to uncover respondents' inherent novelty seeking in this study. The questions included: "I enjoy learning about different investment opportunities", and "I am unlikely to try a new financial service until someone I know recommends it". The responses were coded on a four-point Liket-type scale (1=mostly

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agree, 2=somewhat agree, 3=somewhat disagree, 4=mostly disagree). To ensure that a higher score indicated a higher level of inherent novelty seeking, the first item was recoded.

Investors' age, educational attainment and income level were the demographic characteristics included in this study. The respondents were asked to report their year of birth. Age was calculated by subtracting the year of birth from 2000. The respondents' education attainment was a categorical variable. The categories were less than high school, high school degree, some college or technical school, and college degree or more. The respondents' income level was recorded as the dollar amount of total before-tax household income.

Analysis

First, factor analysis was conducted including all twelve of the items related to the three constructs subjective knowledge, attitudes toward risk and inherent novelty seeking. Orthogonal factors were obtained using the principal component method with varimax rotation. The resulting factors scores were used as independent variables in hypotheses testing. Another exploratory factor analysis was employed to uncover the underlying common factor of the four items intended to measure consumers' extent of information search. Then the internal consistency of this measure was examined.

Second, descriptive analyses were employed to provide the demographic profile of all of the households, of the groups of respondents engaging in various extents of information search, and of the groups of respondents who seek information from different types of information sources. Descriptive statistics provided information about the distribution of respondents' investment-specific individual differences, personal traits and

demographic characteristics. Means, medians and standard deviations were presented for the continuous variables and frequencies and percentages were presented for categorical variables. It should be noted that the descriptive statistics were generated on weighted data since the sample consisted of a greater proportion of affluent households than the actual proportion they represent in the population.

Third, the hypotheses related to the extent of information search were examined using multiple regression analysis. The independent variables included investment-specific individual differences, personal traits and demographic characteristics. The ratio level measurement of the dependent variable, consumers' extent of information search, justified the choice of multiple regression. The test statistic, t value, tested the individual null hypotheses that each individual independent variable had no statistically significant effect on consumers' extent of information search. As a measure of association, unstandardized regression coefficients were used to interpret the direction and magnitude of the effects of the independent variables on dependent variable that were statistically significant. The F-value were used to test the overall null hypothesis that the set of independent variables explained no variability in consumers' extent of information search for investments.

Last, logistic analysis was used to investigate the effects of potential determinants on consumers' choice of a certain source of information. A set of logistic regressions was run to estimate the probability of whether or not a consumer will use literature, media, the internet, friends/family, or professional financial services providers when making a investment decision. The dependent variable in this regression was the general logit, which was the probability of belonging to category 1 (using a certain source) over

category 2 (not using a certain source). In this step, correlation coefficients among the independent variables were examined to ensure a lack of multicollinearity. Wald's Chi-square was the test statistic for the individual null hypotheses that each independent variable had no statistically significant effect on the choice of a certain information source. The direction of the significant relationships was indicated by the unstandardized logistic regression coefficients. The odds ratios were used to determine the magnitudes and directions of the relationships. R-square measured the improvement in predictive efficacy of the research model over the null model. The probability of choices of certain information sources was forecast by predicted probability.

CHAPTER 5

RESULTS

Factor Analysis

Table 2 presents the results of the factor analysis of the independent variables that are measured by multiple items. Three factors emerged, using principle factor analysis. Factor 1 represented consumers' attitudes toward risk. A positive score indicated a liberal attitude toward risk and a negative score indicated a conservative attitude toward risk. Factor 2 reflected a consumer's subjective knowledge. Consumers with a higher level of self-assessed knowledge about investments had a positive score, while those with a lower level of self-assessed knowledge about investment had a negative score. Factor 3 reflected a consumer's inherent novelty seeking. Consumers with a positive score were more inherently innovative, while those with a negative score were less inherently innovative.

Factor loading scores are indicated by the bold face numbers. The eigenvalues, which were 3.26, 1.90 and 1.06, respectively, suggested a three-factor solution. The factors explained 27.14%, 15.81% and 8.80%, respectively, of the variance for a total of 51.75%. However, two items had cross loadings on different factors. The item, "I consider myself a sophisticated investor", was expected to measure the construct of subjective knowledge, but was also related to the factor attitudes toward risk. Another item, "It's very important to me to have both a guaranteed interest rate and federal insurance on my savings" reflected both one's attitudes toward risk and one's inherent novelty seeking. Also, the

item, "I enjoy learning about different investment opportunities" loaded on the factor attitudes toward risk instead of inherent novelty seeking. Even though it was unexpected, the results were not surprising because these three factors are related to some extent. A consumer with a higher level of subjective knowledge may be more willing to accept risk, i.e. have a liberal attitude toward risk, because they may perceive greater ability to handle the risk. Similarly, the more inherently innovative a consumer is, the more risk he/she is willing to take since a higher return is associated with higher risk investment.

Results of the factor analysis of the dependent variable, extent of information search, are presented in Table 3. There were four items intended to measure the extent of consumers' information search. The bold face numbers indicate the factor loading scores. All of the four items were significantly related to this construct since all the factor loadings are above .60. The variance explained by this factor is 1.97, about one-half of the total variance. The factor score resulting from the factor analysis was used in the following descriptive and regression analysis. A consumer engaging in less (more) information search would expect to receive a lower (higher) score.

Descriptive Analysis

Table 1 shows the demographic profile of the sample used in this study. There were a total of 3,759 households in this dataset, representing all households in the United States. The average amount invested was about $124,000 for all of the households. The greatest proportion (40.2%) of the households invested less than $10,000, with relatively equal proportions investing in each of the four other categories. On average, the respondents were 49 years old. In terms of distribution, the greatest proportions were 35 to 44 years old (23.1%), 65 or older (21.1%), 45 to 54 years old (20.1%), or 25 to 34 years old

(18.4%). Only 3.9% were 18 to 24 years old. The respondents were somewhat equally distributed across the levels of education. Respondents with less than high school education accounted for 18.5% of the sample, those with a high school education accounted for 28.4%, those with some college education accounted for 26.9% and those with bachelor's degree or higher accounted for 26.2%. The average income for the sample was about $51,300. The largest proportion (45.0%) of the households earned less than $35,000 annually. About one-fourth (25.1%) had incomes between $35,000 and $59,999, while 18.5% had incomes between $60,000 and $99,999. Only 11.3% of the households had annual incomes above $100,000.

Households were divided into quartiles based on extent of their information search. Households were also differentiated by their choice of each of the five information sources: using literature, media, the Internet, friends or family members, and professional financial services providers. Table 3 presents some simple statistics concerning the extent of respondents' information search and their choice of information sources. Considering the extent of information search, about three-fifths (61%) of households preferred to consult a specialist when making financial decisions; more than 80% of households reported that they liked to discuss their financial options before making a decision. One-half of respondents thought it is important to use their financial institution as a sounding board, while at least 50% seek advice before making major household financial decisions. Regarding usage of the information sources, most households searched for information from literature (44.9%), followed by from friends or family members (35.7%), media (32.9%), the Internet (19.1%), and professional financial services providers (16.8%).

Table 4 presents descriptive statistics of households in each of the quartiles based on extent of information search. The descriptive statistics are investment-specific individual differences, personal traits and demographic characteristics. The four groups were significantly different in each of the above characteristics.

There was a significant difference in self-assessed investment knowledge adequacy, i.e., subjective knowledge, among the groups of households who engage in different amounts of information search (p< 0.0001). On average, the most passive searchers (those in the lowest quartile) had the highest level of subjective knowledge while the most active searchers (those in the highest quartile) had the lowest level of subjective knowledge.

Only a marginal difference existed in the average amount of investments among the four groups of households (p=0.0899). However, the distribution across groups was significantly different (p< 0.0001). For example, compared to active information searchers (i.e., households in the third and fourth quartile of information search extent), a greater proportion of passive information searchers (i.e., households in the lowest and second quartile of information search extent) had investments less than $10,000. In contrast, the most passive searchers were less likely to invest more than $200,000 than the most active searchers (11.4% vs. 18.8%).

The four groups of households also differed in terms of attitudes toward risk and inherent novelty seeking (p<0.0001 and p<0.0001, respectively). The most passive searchers were households with the most conservative attitude toward risk. These households were, however, the most inherently innovative.

In terms of demographic characteristics, significant differences were found across the four groups of households in their age and education. Consumers who searched the least (49.8 years old on average) and those who search the most (49.8 years old on average) were slightly older than the consumers in the middle two quartiles (48.2 years old and 48.1 years old on average, respectively) (p<0.0001). More than one-half (52.7%) of the most passive information searchers (in the lowest quartile) and 47.9% of the moderately passive searchers (in the second quartile) had at most high school education. On the other hand, 56.7% of the moderately active searchers (in the third quartile) and 56.7% of the most active searchers (in the fourth quartile) had at least some college education. The average income was not different among the groups (p=0.4601), but there was a significant difference in the distribution. Consumers in households who earned less than $35,000 comprised 49.8% of the most passive searchers and 49.0% of the moderately passive searchers, but only 39.5% of the moderately active searchers and 42.6% of the most active searchers.

<u>Users of literature vs. non-users</u>

Households were also grouped according to whether or not they chose a certain source of information: literature, media, the Internet, friends/family and professional services. Table 5 presents descriptive statistics of users and non-users of literature as an information source. Among the 3,759 households, 2,271 households searched for information from literature, i.e., books, consumer magazines, other magazines, newspaper articles, financial newsletters and brochures/written materials. Non-users totaled 1,488 households. Users and non-users were significantly different in investment-specific individual differences, attitudes toward risk and demographic characteristics.

On average, literature users had a higher level of subjective knowledge about investments than non-users (p<0.0001). The average amount of investments was much higher for literature users ($201,882) than non-users ($60,860). Specifically, only 28.7% of the literature users invested less than $10,000, while 50.9% of non-users had investments totaling less than $10,000. In contrast, nearly 40% of literature users had more than $100,000 in investment assets compared to only about 15% of non-users. Users of literature were more risk liberal than literature non-users (p< 0.0001). But inherent novelty seeking was not significantly different between users and non-users. There was a marginally significant difference between the ages of literature users and non-users (46.5 and 51.1 years old, respectively) (p=0.1030). A greater proportion of literature users were less than 55 years old (72.4%) while 40.1% of non-users were older than 55 years old. Literature users also had more education than non-users. About 70% of literature users had at least some college education, while about 60% of non-users had only a high school education or less. Literature users earned more than non-users (p<0.0001). The average income was $66,483 for literature users, and only $39,041 for non-users.

Users of media vs. non-users

Table 6 presents descriptive statistics about households seeking information from media. Media users accounted for 1,598 households, while 2,161 households were non-users. Similar to the findings for literature users and non-users, media users and non-users differed in investment-specific individual differences, attitudes toward risk and demographic characteristics.

The level of subjective knowledge about investments was higher for media users than non-users (p<0.0001). On average, media users had more investment assets than non-users ($194,303 versus $89,465). Nearly one-fourth (23.2%) of media users invested more than $200,000, compared to about one-tenth of non-users. Media users were more risk liberal than non-users (p<0.0001). No difference existed between media users and non-users in terms of inherent novelty seeking (p=0.9350). The distribution of households by age was very similar among media users and non-users. However, on average, media users are slightly younger than non-users (47.8 years old vs. 49.6 years old) (p<0.0001). About 65.3% of media users had at least some college education, while more than half (52.8%) of non-users did not have any college education. While the average income was not significantly different between media users and non-users, the distribution was significantly different (p<0.0001). Particularly, a greater percentage (48.7%) of non-users had an income less than $35,000, compared to 37.6% of users. In addition, 17.8% of media users, about twice the proportion of non-users, had incomes higher than $100,000.

Users of the Internet vs. non-users

Descriptive statistics of both Internet users and non-users are presented in Table 7. There were 1,054 respondents who searched for information from the Internet. The Internet users differed from non-users in terms of their investment-specific individual differences, personal traits and demographic characteristics.

Internet users, on average, had a higher level of subjective knowledge than non-users (p<0.0001). The amount of their investments was also higher for the Internet users than for non-users (p=0.0036). On average, Internet users' total investments were more than

twice the total mean for non-users ($219,172 vs. $101,504). In terms of distribution, more than one-half (54.1%) of Internet users invested more than $50,000, while a majority (67.6%) of Internet non-users invested less than $50,000. Internet users had more liberal attitudes toward risk (p<0.0001) and were more inherently innovative than non-users (p<0.0001). On average, Internet users were over 10 years younger than non-users (40.8 years old vs. 50.9 years old) (p=0.0036). Only 12.8% of the Internet users were older than 55 years, while 39.7% of Internet non-users were older than 55 years. Internet users were also better educated (p<0.0001). More than four-fifths (80.7%) of Internet users had at least some college education while more than one-half (53.4%) of non-users had only a high school education or less. Particularly, among Internet users, more than one-half (50.4%) had a bachelor's degree or higher, almost two and a half times the proportion among non-users. The distribution of income was significantly different (p<0.0001) even though the average income was not statistically different (p=0.1466) between Internet users and non-users. Internet users were somewhat evenly distributed across the four income groups. On the other hand, a majority (50.19%) of Internet non-users were low-income households with annual incomes less than $35,000. More than three-quarters (75.63%) of non-users earned less than $60,000 annually.

Users of friends/family vs. non-users

Among the 3,759 respondents, 39.8% (1,496) of the respondents obtained investment information from friends or family members (i.e. friends/family users) and 2,263 respondents did not (i.e. friends/family non-users). Table 8 presents the descriptive statistics for these two groups. They were significantly different in investment-specific individual differences, inherent novelty seeking and demographic characteristics.

On average, those who obtained information from friends/family were less knowledgeable about investments (p<0.0001) and less inherently innovative (p=0.0003) than those who did not obtain information from this source. The average amount of investments was $134,407 for those who obtained information from friends/family, $16,418 more than those who did not obtain information from this source. More than one-half (50.6%) of friends/family users had more than $25,000 in total investments. In contrast, more than one-half (55.0%) of friends/family non-users invested less than $25,000, typically less than $10,000. There was no significant difference in attitudes toward risk between those who consulted friends/family and those who did not (p=0.9760). Users were much younger, better-educated and earned more than the non-users. A majority (59.0%) of users were under 45 years old, while a majority (62.2%) of non-users were older than 45 years old. Nearly two- thirds (66.1%) of users had at least some college education, while more than one-half (54.0%) of non-users had at most a high school education. Also, users tended to earn more than non-users (p=0.0432). Almost one-half (49.8%) of non-users earned less than $35,000, while only 36.6% of users belonged to this group.

Users of professional financial services providers vs. non-users

Among the 3,759 households, only 25.3% (952 respondents) used professional services for investment information and 2,807 households did not. Demographic statistics for these two groups are presented in Table 9. These two groups were significantly different on each of the characteristics investigated.

Compared to non-users, users tended to have a lower level of subjective knowledge but held a much higher amount of investments. On average, professional services users

invested about 2.8 times as much as non-users ($268,442 vs. $94,854). Over one-half (50.6%) of users had investments totaling over $100,000, compared to only about one-fifth (19.8%) of the non-users. Moreover, a little less than three-fifths (58.12%) of non-users possessed investments totaling less than $25,000. The two groups also differed in personal traits. Professional services users were much more risk liberal and less inherently innovative than non-users. The two groups were significantly different in terms of demographic characteristics. In general, users tended to be older, better-educated and have higher incomes than non-users. Among users, 43.5% had a bachelor's degree or higher and another 30.1% had some college education. Over one-half (51%) of non-users had only a high school education or less. Professional services users earned $26,141 more than non-users on average. Over one-fifth (20.9%) of users were high-income households with annual incomes of more than $100,000, while almost one-half (49.6%) of non-users had an annual income of less than $35,000.

Correlation Analysis

Interdependencies between independent variables can cause a multicollinearity problem and make the results of multiple and logistic regression analyses unreliable. Thus, correlation analysis was employed to examine the interdependencies among the independent variables. Results of the correlation analysis are presented in Table 10. The correlations between the continuous variables were relatively weak. All but two of the coefficients were less than 0.30. The correlation between inherent novelty seeking and attitudes toward risk was 0.36. Of greater concern, however, was the high correlation (0.55) between the total amount of investments and income. To avoid multicollinearity, income was employed as a set of binary variables in the regression analysis.

Multiple Regression Analysis

The relationship between the extent of consumers' information search and their investment-specific individual differences, personal traits and demographic characteristics was examined using multiple regression analysis. The results were presented in Table 11. The dependent variable, extent of consumers' information search, was a continuous variable with the factor score ranging from –1 to 1. Each hypothesis regarding the effect of each individual independent variable on consumers' information search was tested in *ceteris paribus* condition.

Investment-specific individual differences significantly affected the extent of consumers' information search. Subjective knowledge was significantly (t= -21.45, p<0.0001), and negatively related to the extent of information search. The coefficient of – 0.3175 indicates that, compared to consumers with an average level of subjective knowledge, a consumer with the highest level of subjective knowledge will decrease his/her extent of information search by 31.75%. The total amount of investments was also a significant predictor of the extent of information search (t=3.49, p<0.0001). The unstandardized regression coefficient was 0.000434. If the respondent has investments that total $10,000 more than other respondents, that consumer would be expected to increase his/her extent of information by 0.434%.

Personal traits were also predictors of the extent of consumers' information search. The effect of attitudes toward risk on the extent of consumers' information search was statistically significant (t=12.30, p<0.0001). The unstandardized regression coefficient for attitudes toward risk was 0.1964, which indicates that consumers who are risk liberal would engage in information search that would be 19.64% higher than those who are risk

neutral. The extent of consumers' information search was also significantly but negatively influenced by their inherent novelty seeking (t=-22.11, p<0.0001). The coefficient of -0.3184 indicates that the extent of information search is 31.84% lower for the most inherently innovative consumers than for average consumers.

Among the demographic characteristics, only age (t=4.00, p<0.0001) and income (t=-2.78, p=0.0055) could be used to predict the extent of consumers' information search. Age was positively related to the extent of consumers' information search. A one-year increase in age will result in an increase in information search of 0.41%. There was a significant difference between the extent of information search for households with incomes less than $35,000 and those with incomes ranging from $35,000 to $59,999. The extent of information search for households with incomes less than $35,000 was only about 87% of that for households with incomes between $35,000 and $59,999. The extent of information search among households who earned more than $60,000 was not significantly different, relative to information search of households earning between $35,000 and $59,999.

The null hypothesis that the set of seven variables would not explain any of the variance in the extent of consumers' information search was rejected (F=112.63, p<0.0001). The R-square for the whole model was 0.2485, indicating that investment-pecific individual differences, personal traits and demographic characteristics explained about 25% of the variability in the extent of consumers' information search. After adjusting for the number of variables in the model and the sample size, the adjusted R-square is 0.2463.

Logistic Regression Analysis

Whether or not consumers will choose a certain source of information is another question of interest in this study. The information sources included literature, media, the Internet, friends/family and professional services. Thus, five models were established and logistic regression analyses were conducted to examine each model for each information source using SAS PROC LOGISTIC procedure. The dependent variable in each model was the log odds ratio, ln (P1/P2), where P1/P2 was the probability of using a certain source of information over the probability of not using that source of information. The factors that were expected to influence consumers' choice of a certain information source were their subjective knowledge of investments and their income; the other variables served as control variables. The results of the logistic regression analyses are presented in Table 12 to Table 16.

Literature

Table 12 shows the results of the estimated logistic regression model concerning consumers' choice of literature as an information source. Consumers' subjective knowledge was significantly related to the log odds of consumers' choice of literature with a Wald χ^2 of 27.17 (p<0.0001). Consumers with a higher level of subjective knowledge were more likely to seek information from literature than those with a lower level of subjective knowledge (the factor score ranges from –1 to 1). Specifically, the odds of choosing literature as an information source for consumers who perceived themselves as the most knowledgeable were about one and a quarter as large as they were for those who perceived themselves to have average knowledge (the odds ratio=1.232). There was also a significant relationship between consumers' income and their choice of

literature as an information source. Compared to households with incomes ranging from $35,000 to $59,999, both households who earned less than $35,000 and households who earned $60,000 to $99,999 were less likely to search for information from literature (Wald χ^2=46.30, p<0.0001; Wald χ^2=7.12, p=0.0076, respectively). High-income households who earned more than $100,000 were marginally more likely to search for information from literature (Wald χ^2=3.52, p=0.0605).

The model was a good fit with a Chi-square of 841.24 (p<0.0001). The whole model had a significant predictive efficacy for the log odds of consumers' use of literature as an information source. Specifically, the independent variables as a whole improved the predictive efficacy of the model by 20.05% over the null model.

Media

The results of the estimated logistic model for consumers' use of media as an information source are showed in Table 13. Subjective knowledge was significantly and positively related to the log odds of consumers' use of media as an information source (Wald χ^2= 40.74, p<0.0001). The odds ratio was 1.263. Consumers with the highest level of subjective knowledge had odds of choosing media about one and one-fourth as large as those of consumers with an average level of subjective knowledge. Households with incomes less than $35,000 were less likely to search for information from media than households with incomes of $35,000 to $59,999 (Wald χ^2=8.17, p=0.0043). The log odds of searching for information from media for low-income households with incomes less than $35,000 were a little less than three-fourths as large as they were for households with incomes of $35,000 to $59,999. Similarly, households with incomes of $60,000 to $99,999 were less likely to search for information from media than households with

incomes of $35,000 to $59,999 (Wald χ^2=5.12, p=0.0237). Their odds of seeking

information from media were about four-fifths as large as they were for households with

incomes of $35,000 to $59,999. No difference in the likelihood of searching from media

was found between households with incomes between $35,000 to $59,999 and those with

incomes above $100,000. The Chi-square of 371.05 was significant at 0.001 level for this

model. All of the independent variables as a whole improved the predictive efficacy in

consumers' choice of media as an information source by 9.4%.

<u>The Internet</u>

Table 13 presents the results of the logistic regression analysis for usage of the

Internet as an information source. A significant and positive relationship was found

between one's subjective knowledge and his/her log odds of using the Internet for

information (Wald χ^2=75.76, p<0.0001). The odds for consumers who perceived

themselves to be the most knowledgeable were nearly one and one-half as large as they

were for consumers who had an average level of subjective knowledge. An increase in

subjective knowledge increased one's likelihood of seeking information from the

Internet. Both households who earned less than $35,000 annually and those who earned

between $60,000 to $99,999 were less likely to search for information from the Internet

(Wald χ^2=51.66, p<0.0001; Wald χ^2=10.54, p=0.0012) than households who earned

between $35,000 to $59,999. The odds of using the Internet for information for

households with incomes less than $35,000 and for households with incomes between

$60,000 to $99,999 were only about one-third and two-thirds as large as they were for

households with incomes of $35,000 to $59,999. However, the likelihood of seeking

information from the Internet was the same for households who earned more than

$100,000 as for households who earned $35,000 to $59,999. A good fit of the model was indicated by the highly significant Chi-square of 918.45 (P<0.0001). The predictive efficacy was improved by 21.68% over the null model (R-square=0.2168).

Friends/family

In Table 15 are the logistic regression results with respect to consumers' seeking information from friends or family members. These results were somewhat different from those for consumers' choice of literature, media or the Internet as information sources. Subjective knowledge negatively affected the log odds of consumers' choice of friends/family as an information source (Wald χ^2=7.85, p=0.0051). The odds of seeking information from friends or family members for consumers who had the highest level of subjective knowledge were about 90% as large as they were for consumers who had an average level of subjective knowledge. Among groups with different income levels, only those who earned less than $35,000 had a decreased likelihood of seeking information from friends or family members (Wald χ^2=10.60, p=0.0011). The odds of consumers' use of friends/family as an information source for households with incomes less than $35,000 was about 70% as large as it was for households with incomes of $35,000 to $59,999. Households who earned above $60,000 did not demonstrate differences in their likelihood of seeking information from friends and family members (Wald χ^2=0.99, p=0.3196; Wald χ^2=0.0725, p=0.7877, respectively). The Chi-square for this model was 322.98 and the improvement in the predictive efficacy over the null model was about 8.23% (R-square=0.0823).

Table 16 presents the results of the logistic regression analysis of consumers' use of professional services as a source of information. Subjective knowledge exerted a negative effect on the log odds of consumers' use of professional services as a source of information (Wald χ^2=13.39, p=0.0003). Increases in one's subjective knowledge would decrease his/her likelihood of seeking information from professional services. The odds of consumers' use of professional services for consumers with the highest level of subjective knowledge were about 86% as large as they were for consumers with an average level of subjective knowledge. Again, the results showed that low-income households who earned less than $35,000 annually were less likely to turn to professional services providers for information than households who earned $35,000 to $59,999. Their odds of seeking information from professional services were only 42% as large as those for households with incomes of $35,000 to $59,999. The likelihood of seeking information from professional services providers was the same for all households with incomes above $35,000. This model also produced a significant Chi-square of 356.36 and improved the predictive efficacy of consumers' choice of professional services by 9.04% (R-square=0.0904).

In addition to subjective knowledge and income, there were five other variables included in each model. While they served as control variables in this study, some of the results are worthy of discussion here. The amount invested had a significant effect only in the model regarding the choice of literature as an information source. In contrast, attitudes toward risk was a significant predictor in all of the five models and the coefficients were all positive. In other words, more liberal attitudes toward risk tended to

increase the likelihood of seeking information from all sources. Consumers' inherent

novelty seeking also influenced their use of information sources. A positive relationship

was found in the case of the Internet and a negative for use of friends/family and

professional financial services providers. Age also played a significant role in predicting

the odds of consumers' choice of use of the Internet, friends/family and professional

services. In general, older consumers were less likely to seek information from the

Internet and friends/family but more likely to seek information from professional services

providers than younger consumers. The effects of education were similar in all five

models; compared to high school graduates, consumers who had at least some college

education were more likely to search for information from all five sources. Consumers

with less than a high school education differed from high school graduates only in terms

of using literature and professional financial services as information sources.

CHAPTER 6

DISCUSSION

This study investigated the factors that influenced the extent of consumers'
information search and their use of certain types of information sources (i.e., literature,
media, the Internet, friends/family and professional services providers) when making
investment decisions. Investment-specific individual differences (i.e., subjective
knowledge, perceived risk and the amount of investment), personal traits (i.e., attitudes
toward risk and inherent novelty seeking) and demographic characteristics (i.e., age,
education and income) were expected to affect the extent of consumers' information
search. The effects were expected to be mediated by benefits of search, costs of search,
motivation to search and ability to search. However, because measures of the mediators
(i.e. benefits of search, costs of search, motivation to search and ability to search) were
unavailable in the MacroMonitor, the secondary dataset used in this research, the
analyses could not include examination of these mediators.

Multiple regression was employed in the analysis of the extent of consumers'
information search. Hypotheses testing were based on the directions and magnitudes of
the parameters estimated from the regression analyses. A summary of the hypotheses
tests is shown in Table 17. Among the investment-specific individual differences, both
subjective knowledge and the amount of investment impacted the extent of consumers'
information search.

The multiple regression analysis showed that the extent of consumers' information search was negatively associated with their subjective knowledge about investment products. However, the effect of subjective knowledge on information search needs a more in-depth analysis. As discussed earlier, subjective knowledge has multiple effects on the extent of consumers' information search, with the effects mediated by benefits of search, cost of search and ability to search, respectively. The different mediators affect search in different ways. Specifically, increased subjective knowledge decreases information search by lowering perceived benefits from search (H1.1); increased subjective knowledge increases information search by lowering perceived costs of search and increasing perceived ability to search (H1.2a and H1.3). Since the first effect is negative while the last two effects are positive, the total effect of subjective knowledge depends on the relative magnitude of the opposite effects. Because the mediators were not measured, these effects of subjective knowledge could not be tested separately. Therefore, it was the total effect of subjective knowledge that was examined in the analysis. Nevertheless, the analysis still generated meaningful results. Since consumers' subjective knowledge was found to negatively affect the extent of consumers' information search, it suggests that the negative effect outweighs the positive effects of subjective knowledge on consumers' extent of information search. Thus, hypothesis 1.1 was supported. Consumers with a higher level of subjective knowledge were less motivated to search and actually engaged in less search than those with a lower level of subjective knowledge.

As expected, the total amount invested had a positive impact on consumers' information search. Consumers with more money in investments, as expected, engaged in

more search activities for information (H2 supported). When the investment is larger, it may be more important and thus the consumer is likely to be more involved. However, the effect was relatively small; a $1,000,000 difference in the amount invested will only resulted in a 0.4% difference in the extent of information search. This result may suggest that even though the amount invested differed among households, the importance of the investment depends on the amount invested relative to that household's wealth or income. If so using only the amount invested may make households appear similar in information search behavior when they may not be. As an individual's investments increase over time, the extent of information search may not increase or may not increase proportionately to the increase in investments if information search was thorough before making the initial investment decision. Thus, one's future investment decisions may rely largely on one's previous knowledge unless there is a dramatic increase in the amount invested.

Personal traits were also significantly related to the extent of one's information search. However, the results were opposite of the hypothesized direction. Consumers who were more accepting of risk engaged in more search for information than those who were more risk averse (H3 not supported). This result was further confirmed in the descriptive analysis reported in Table 4. The factor scores of attitudes toward risk for active information searchers were higher (i.e., a more liberal attitude toward risk) than the scores for passive searchers. A plausible explanation would be that a consumer who has a more liberal attitude toward risk is not only more willing to take substantial risk but also expects a higher return than a consumer who has a more conservative attitude toward risk. Consumers who are willing to take substantial risk for high returns may engage in

more search activities in an attempt to reduce the risk (Bauer, 1960; Bennett & Harrel, 1975; Howard & Sheth, 1969). In contrast, risk-averse consumers tend to purchase investment products that have lower risk and also a lower return. The benefits to search for information about low-risk, low-return investment products are not as great as for high-risk, high-return products.

The effect of inherent novelty seeking on consumers' information search was significant and negative (H4 not supported). This result was, however, contrary to what was hypothesized. One possible explanation is the weakness of the measurement of inherent novelty seeking in this study. As noted in the results of the factor analysis (Table 2), the inherent novelty seeking factor did not have large factor loadings and there was a cross loading with the factor on attitudes toward risk. Therefore, the result concerning the effect of inherent novelty seeking is not robust and future investigation of this variable is necessary.

Among the demographic characteristics, income and age had significant impacts on the extent of consumers' information search. In addition, it should be noted that the difference between consumers who did not complete high school and those who did was marginally significant (p value=0.06). No difference was found among respondents with other levels of educational attainment (H6 not supported). Compared to high school graduates, consumers with less than a high school education searched less, perhaps as a result of their lower levels of knowledge and greater difficulty in understanding materials related to investment products.

Income was a significant predictor of the extent of consumers' information search. Yet, its effect was not in the direction hypothesized. Increases in income were expected

to decrease one's information search. Instead, the results indicated that low-income consumers (i.e., those with household incomes less than $35,000) searched less than consumers with household incomes between $35,000 and $59,999, while no difference in the extent of information search was found among the consumers with household incomes higher than $35,000 (H5a not supported). These results were also reflected in the descriptive statistics in Table 4. Nearly one-half of those who are in the lowest (49.81%) or second (48.99%) quartile of the extent of information search were consumers in households with incomes below $35,000. Previous studies had suggested either a linear relationship (Marvel, 1976) or an inverted-U-shape relationship (Andreasen & Ratchford, 1976; Carlson & Gieseke, 1983; Morgan, 1988; Ratchford, 1988) between income and consumers' extent of information search. Despite a lower opportunity cost, perhaps low-income consumers engaged in little search. Note that a majority (52.68%) of the most passive information searchers had no more than a high school education.

Age was another significant demographic characteristic that was expected to predict the extent of consumers' information search. Older consumers searched more for information than younger consumers. The largest percentage of consumers in the group of most active information searchers (who were in the fourth quartile of the extent of information search in Table 4) was those who were at least 55 years old. This is also contrary to the hypothesized direction (H7 not supported). The positive effect was not very robust since 10 years difference in age only resulted in a 4.1% difference in the extent of search. Interestingly, the descriptive analysis in Table 4 revealed that the most passive information searchers were almost as old as the most active searchers on average, and both were older than the moderate passive and active searchers.

As discussed earlier, even though consumers may exhibit a similar effort in overall search for information, they may vary in their choice of information sources. In this study, the sources were grouped into five categories: literature, media, the Internet, friends/family and professional financial services providers. Consumers' subjective knowledge and income were expected to influence their decisions of whether to use each of the types of information sources. The results are summarized in Table 18 in Appendix A, along with the results associated with total amount invested, attitudes toward risk, inherent novelty seeking, age and education. Each served as control variables and may provide additional insights for future studies.

Both subjective knowledge and income had a significant effect on consumers' likelihood of using literature as an information source. Relative to consumers with a lower level of subjective knowledge, those with a higher level of subjective knowledge were more likely to search for information from literature, such as books and consumer magazines (H1.2b supported). Perhaps they think of themselves as more capable of understanding and taking advantage of the information conveyed in literature. A relatively low cost associated with search from this source could be another important reason that consumers choose literature.

The likelihood of searching from literature was expected to decrease as income increased. Compared to consumers with household incomes between $35,000 and $59,999, the likelihood of searching information from literature decreased for consumers with household incomes between $60,000 and $99,999 as expected (H1.6b supported in this case), while it increased for consumers with household incomes higher than $100,000 and decreased for consumers with household incomes less than $35,000 (H5b not

supported). In other words, the relationship between income and the likelihood of searching for information from literature was cubic rather than linear. A higher opportunity cost may be a major reason that consumers with household incomes between $60,000 and $99,999 were less likely to use literature as information source. For consumers with household incomes less than $35,000, books or magazines are relatively more expensive than for other households with higher incomes. In addition, it is possible to assume that their lower levels of education may overtake the benefits of their low opportunity cost and therefore discourage them from using this source of information. In contrast, the higher educational level of those with incomes higher than $100,000 may make them more efficient in getting information from literature, and this advantage may overshadow the disadvantage of a higher opportunity cost. The likelihood of using literature was only marginally different (p=0.0605) between consumers with household incomes between $35,000 and $59,999 and those with household incomes higher than $100,000. The analysis also showed that those with more education were more likely to search for information from literature, which suggests education improve one's efficiency of search for information from literature.

Concerning consumers' use of media as an information source, subjective knowledge and income were significant predictors. Consumers who perceived they had a higher level of knowledge were more likely to seek information from media (H1.2c supported). Similar to those who seek information from literature, consumers with a higher level of subjective knowledge believed they were better able to understand the professional terms and information distributed by the media. Media is a good choice also because the information is widely available and practically free. The primary cost to consumers is

time spent looking for the specific media and/or specific information. Compared to consumers with household incomes between $35,000 and $59,999, consumers whose household incomes were less than $35,000 and those whose household incomes were between $60,000 and $99,999 were less likely to search for information from media, while consumers whose household incomes were $100,000 or more were equally likely to search from media (H5c partially supported). This result is similar to the one for literature as an information source.

Both subjective knowledge and income had a significant impact on consumers' search from the Internet. Consumers who think of themselves as more knowledgeable were more likely to search from the Internet (H1.2d supported). Perhaps they believe their previous knowledge could help them with searching and understanding the information. They are more likely to know that there is information about investment on the Internet. Low-income consumers in households with incomes less than $35,000 were much less likely to use the Internet for information than those with incomes between $35,000 and $59,999. According to a recent report from U.S. General Accounting office (2001), the median income for households that have no access to either DSL or cable modem was about $28,000. A generally low level of computer literacy and the unavailability of Internet access to many low-income consumers mean they are less likely to use the Internet. Consumers with household incomes between $60,000 and $99,999 were also less likely to search for information on the Internet than those with household incomes between $35,000 and $59,999. The effect of a high opportunity cost may outweigh any advantages associated with households with incomes between $60,000 and $99,999, such as greater access to the Internet. Interestingly, there was no difference in

the likelihood of using the Internet for information between consumers in households that earned $100,000 or more and those in households that earned $35,000 to $59,999. Perhaps the greater efficiency of households with incomes of $100,000 or more leads to greater perceived benefits from search for information, compared to consumers with household incomes of $35,000 to $59,999. The greater benefits of the search could justify the higher opportunity cost. Therefore, the negative effect of income on consumers' use of the Internet was present only when income increased from the level of $35,000-$59,999 to the level of $60,000-$99,999 (H5d partially supported).

The likelihood of seeking investment information from friends or family members was associated with one's subjective knowledge and income. Different from the findings of use of literature, media or the Internet, increased subjective knowledge decreased one's likelihood of seeking information from friends and/or family members (H1.2e supported). Friends and family members tend to provide advice about which investment products to buy rather than information about the quality of an investment product. Furthermore, their advice may often be biased or obsolete. Thus, consumers with higher levels of subjective knowledge are less likely to seek advice from friends or family members. The analysis found that consumers with household incomes in the three categories above $35,000 were equally likely to search for information from friends and/or family members (H5e not supported in this case). However, consumers in households earning less than $35,000 were less likely to seek information from friends or family members than consumers with household incomes between $35,000 and $59,999 (H5e supported in this case). One's friends or family members usually are similar in terms of socioeconomic status. Thus advice about investments from lower-income

consumers' peers may neither be very available, reliable, nor helpful. Moreover, as discussed earlier, lower-income consumers engaged in less overall search than consumers with household incomes between $35,000 and $59,999. Thus, it appears the investment information that a lower-income consumers' friends and/or family members might provide would be limited. These results also suggest that opportunity cost was almost negligible when obtaining information from friends and/or family members perhaps because the search process is usually not independent but often involved in daily social activities.

As for professional financial service providers as an information source, subjective knowledge and income significantly affected one's likelihood of using this source. Consumers with a higher level of subjective knowledge were less likely to use professional financial services providers (H1.2f supported). This result is logical since consumers who are confident with their own knowledge may not need professional advice, which is often expensive. Instead, other relatively cheaper sources, such as literature, media and the Internet, would be good alternatives to the expensive professional services. Lower-income consumers in households that earned less than $35,000 were less likely to seek information from professional services providers than consumers with household incomes between $35,000 and $59,999 (H5f supported in this case). The relatively high cost associated with professional financial services may prevent low-income consumers from using this source of information. The relatively small amounts invested by lower-income consumers make the potential benefits from using professional services less likely to equal or exceed the corresponding costs. No significant difference was found among the three groups of consumers with household

incomes above $35,000 (H5f not supported in this case). This is surprising since not only do financial services become more affordable as income increases but opportunity cost of searching for information also increases. There may be two plausible reasons for this result. First, there may be some interaction effects between income and other factors, such as education, knowledge and involvement, on consumers' use of professional services. In other words, the effect of income on the likelihood of using professional financial services may depend on levels of other factors. Second, there are various types of professional services providers, such as full services brokers and discount brokers. Difference would be observed on consumers' likelihood of using each of different types of services even though the overall likelihood of using professional financial services is not different. Future studies in terms of seeking information from professional services providers are warranted.

CHAPTER 7

CONCLUSIONS AND IMPLICATIONS

The major purpose of this study was to better understand consumers' information search behavior when making investment decisions. Based on the economic, psychological and information processing approaches in the area of consumer information search, a conceptual model was established to investigate consumers' extent of information search. Using data from 2000-01 MacroMonitor, this study empirically investigated the factors that influence the extent of consumers' information search and their use of information sources when searching for an intangible good - investments. Along with the literature on the nature of investment decisions and consumer information search, the results of this study contribute to the understanding of the two fundamental information search issues: how much and from what sources consumers search for information about investment products.

A majority of U.S. households actively searched for information when making their investment decisions. The analysis suggested that investment-specific individual differences (i.e., one's subjective knowledge and amount invested), personal traits (i.e., attitudes toward risk and inherent novelty seeking) and demographic characteristics (i.e., age and income) are useful predictors of consumers' extent of information search.

Active information searchers tended to be those who were not as confident in their own knowledge about investments and those who possessed larger amounts of investment assets. Among the most active information searchers, nearly two-fifths

(38.6%) had total investments greater than $100,000; the majority of those had investments greater than $200,000. Active searchers were also more willing to take risks but were not necessarily inherent novelty seeking. They accepted higher risks and also expected higher returns associated with these investment products, but not because of their inherent innovativeness. Active searchers tended to be older. However, the term "older" is relative. The average age for the most active searchers was 49.8 years old. Active searchers also tended to have household incomes above $35,000; however, one's educational level was not predictive of the extent of his/her extent of information search for investment products.

It should be noted that attitudes toward risk and age were significant predictors of the extent of consumers' information search, but the relationship was not consistent with the findings of previous studies of other goods. Consumers' information search behavior for investment products appears to be different from their search behavior for tangible products. Therefore, results from previous studies on search for information about tangible products may not be applicable to consumers' information search for investment products.

Consumers can choose to obtain information from a variety of sources, such as literature, media, the Internet, friends/family and professional services providers. Each is different in terms of the value of the information as well as the costs. Whether to use a particular information source depends on consumers' characteristics, as shown by the results of this study.

A consumer's subjective knowledge influenced his/her use of information sources. Literature, media and the Internet were more likely to be chosen as an information source

by consumers who considered themselves more knowledgeable, while friends/family and professional services providers were less likely to be used.

Consumers possessing different amounts of investments were equally likely to use media, the Internet, friends/family or professional financial services except literature as an information source. Consumers with larger amounts of investment assets were more likely to search for information from literature.

Attitudes toward risk was a significant predictor of consumers' use of information sources when making investment decisions. Consumers with a more liberal attitude toward risk were more likely to seek information from any type of information sources, which may suggest that information from all sources will be helpful in reducing the risk associated with investing.

Consumers' use of information sources also depended on their inherent novelty seeking. Consumers who were more inherently innovative had no special preference for information from literature or the media, but were more likely to use the Internet and less likely to use friends/family and professional financial services providers.

One's age was also a predictor of his/her use of information sources. Consumers of all ages were equally likely to seek information from literature and media. Consumers who obtained information from the Internet tended to be younger. However, younger was middle-aged in this sample since the average age for the Internet users was 40.8 years old. Consumers who obtained advice from friends/family also tended to be relatively younger (43.53 years old on average). Consumers who searched for information from professional financial services providers tended to be older, but only by a few years. On average, consumers using professional financial services were 50.2 years old.

Consumers with different levels of educational attainment used different information sources when they made investment decisions. Literature and professional financial services providers were less likely to be used by consumers with less than a high school education. Education did not influence use of information from media, the Internet and friends/family. Compared to consumers with a high school education, those who had at least some college education were more likely to use each of the information sources.

Income level also influenced the information sources an individual used to make investment decisions. Relative to consumers whose household incomes were between $35,000 and $59,999, households earning less than $35,000 were less likely to use any of the information sources; consumers whose households earned between $69,999 and $99,999 were less likely to use literature, media and the Internet but were not different in obtaining advice from friends/family or professional financial services providers. Those whose household incomes were above $100,000 were more likely to choose literature as an information source but equally likely to search for information from media, the Internet, friends/family and professional financial services providers.

This study provides insights for marketers of investment products or services. First, in a marketing campaign, it is important to differentiate active searchers from passive searchers and to develop different strategies for reaching different types of searchers. Those selling investment products should target consumers who actively search for information. Such consumers are those with a lower level of subjective knowledge, a larger amount invested, who are willing to take substantial risks for higher returns, are around 48 to 50 years old and whose annual household income is at least $35,000. Marketers should aim to provide plenty of information relevant to these consumers to

persuade them to make purchase decisions. Furthermore, as consumers have many choices of information sources, marketers should also take into account the target clients' characteristics when choosing the information channels to disseminate information. For example, marketers of high-risk, high-return investment products should focus on those consumers with a liberal attitude toward risk and provide information through various information sources since risk-taking consumers are likely to search from all information sources. The most effective way to market an investment product designed for older investors is through professional financial service providers rather than through literature, media or the Internet advertising.

Marketers of literature, such as books and financial magazines, should focus on those consumers who are not so confident in their own knowledge but have a liberal attitude toward risk, and those who have both a high household income and a large amount invested. The information conveyed in literature could be relatively sophisticated since most of the searchers would have at least some college education. Media programs that distribute investment information will likely find their primary audience to be those consumers who consider themselves more knowledgeable and more risk-taking and who are better educated. The focus of Internet information providers, such as online services providers, should be consumers who have a higher level of subjective knowledge, a liberal attitude toward risk and a higher level of inherent novelty seeking; demographically, the target audience is younger and better educated. Consumers whose households earned less than $35,000 or those who earned between $60,000 and $99,999 should not be considered by Internet information providers as target clients. Professional

financial services providers should particularly target consumers who have lower levels of subjective knowledge, who are more risk-taking, older, and better educated.

The results of this study are also meaningful to consumer educators, financial planners and counselors. The most important implication would be the fact that it is very necessary to teach consumers to accurately assess their own knowledge about investments since the extent of information search will decrease as subjective knowledge increases. Especially, overconfidence with their own knowledge will make themselves underestimate the importance of information search and potentially make risky investment decisions without sufficient information. Many older consumers were among the most passive information searchers. Consumer educators and financial planners should help these consumers to recognize their shortcomings and encourage them to accurately assess the costs and benefits of searching for information before making investment decisions. It is also a responsibility of consumer educators to help those consumers who have a lower level of knowledge about investment products by identifying reliable sources of information and improving consumers' information search skills.

This study also has implications for future research. First, the area of research about consumers' information search behavior for intangible goods (e.g., investment products) needs more attention because the findings of this study suggest that what we have learned about information search for tangible goods is not directly applicable to information search for investment products.

Without the measurements of the mediators in this study, the proposed model related to consumers' extent of information search for investment products remains conceptual.

The mechanism between the antecedents and information search would be better understood if the effects of the mediators were empirically demonstrated. In particular, the multiple effects of subjective knowledge on consumers' extent of information search through different mediators could be illustrated.

Also, improvement in measurement is needed, especially for inherent novelty seeking. A more comprehensive model needs to be estimated including, variables unavailable in this research, such as perceived risk. In addition, it is suggested that future researchers examine the interactions among influential factors since some surprising nonlinear relationships between independent variables and dependent variables were found in this analysis.

Finally, as a preliminary effort, this study only examined consumers' likelihood of choosing a certain type of information sources. Considering the interaction effects among information sources (Lee & Hogarth, 2000c), further study needs to consider the effect of using a particular information source on a consumer's use of other sources of information. Comparing the relative importance of various information sources would further contribute to the understanding of information search behavior.

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TABLES

Table 1
Descriptive Profile of Sample

Demographic Characteristics	All Households (n=3,759)
Amount of investment	
Less than $10,000	40.18%
$10,000-$24,999	12.17%
$25,000-$49,999	10.46%
$50,000-$99,999	11.58%
$100,000-$199,999	10.47%
$200,000 or more	14.52%
Mean	$123,848
Median	$20,000
Std dev	$429,353
Age	
18-24	3.91%
25-34	18.37%
35-44	23.08%
45-54	20.12%
55-64	13.45%
65 or older	21.07%
Mean	49.01
Median	47.00
Education	
Less than high school	18.49%
High school graduate	28.37%
Some college	26.93%
BS or more	26.21%
Income	
Less than $35,000	45.04%
$35,000-$59,999	25.10%
$60,000-$99,999	18.54%
$100,000 or more	11.32%
Mean	$51,298
Median	$36,390
Std dev	$90,062

Table 2

Results of Factor Analysis Using Varimax Rotation: Attitudes toward Risk, Subjective Knowledge, and Inherent Novelty Seeking

	Attitudes toward risk	Subjective knowledge	Inherent novelty seeking	Final community
B5_13 My household knows how to choose the financial products and services that are best for us.	0.1066	**0.6622**	-0.3206	0.553
E4_11 I consider myself a sophisticated investor.	**0.4565**	**0.5967**	-0.0472	0.567
E4_19 I need help selecting savings and investment products that are best suited to meet my financial goals.	-0.0928	**0.6540**	0.3828	0.583
N3_2 I feel qualified to make my own investment decisions.	0.1865	**0.7476**	0.1072	0.605
N3_11 I do not need advice on investment options.	-0.1479	**0.6314**	0.2145	0.466
E3 Where would you prefer to put most of your household's savings and investments on a 5-point scale? 1-a very low return with a very low risk of loss 5-a very high return with a very high risk of loss	**0.6625**	-0.0419	0.2683	0.513
E4_1 It's very important to me to have both a guaranteed interest rate and federal insurance on my savings.	**0.4001**	0.0844	**0.5116**	0.429
E4_2 I am willing to accept some risk of losing money if an investment is likely to come out ahead of inflation in the long run.	**0.7341**	-0.0202	0.0043	0.539
E4_5 It is wise to put some portion of savings in uninsured investments to get a high yield.	**0.6692**	0.0004	0.0818	0.455
E4_7 I am willing to take substantial risks to realize substantial financial gains from investments.	**0.7162**	0.1122	0.1803	0.558
B5_1 I am unlikely to try new financial service until someone I know recommends it.	0.0762	0.0961	**0.6857**	0.485
N3_4 I enjoy learning about different investment opportunities.	**0.5871**	0.2885	-0.1725	0.458
Eigen-value	3.2569	1.8968	1.0564	6.2101
Variance explained	2.7342	2.2940	1.1819	
Variance explained (%)	27.14%	15.81%	8.80%	51.75%

Table 3
Extent of Information Search and Use of Information Sources (N=3,759)

Extent of Information Search[1]	Mostly Agree	Somewhat Agree	Somewhat Disagree	Mostly Disagree	All	Factor Loading	Final communality
N3_1 I prefer to consult a specialist when making financial decisions.	18.23%	42.81%	28.16%	10.81%	100%	**0.76745**	0.5890
N3_7 I like to discuss my financial options before making a decision about them.	35.41%	47.62%	11.86%	5.12%	100%	**0.71988**	0.5182
N3_14 Using my financial institution as a sounding board is important to me.	10.26%	39.74%	33.69%	16.31%	100%	**0.69156**	0.4783
	Always	Some-times	Rarely	Never			
N4 How often do you or anyone in your household receive advice before making major household investment decisions?	14.41%	37.13%	17.87%	20.85%	100%[2]	**0.62023**	0.3847

Variance explained by the factor = 1.97

Use of Information Sources	Weighted Percentage	Unweighted Frequency
Used Literature	44.90%	2,271
Used Media	32.94%	1,598
Used the Internet	19.11%	1,054
Used Friends/Family	35.73%	1,496
Used Professional Services	16.84%	952

Footnote 1. Weighted percentages are reported.

2. The sum of the percentage does not add up to 100% due to the following responses: don't know (7.49%) and unspecified (2.24%).

Table 4
Descriptive Statistics: Extent of Information Search

Independent Variables	Extent of Information Search			
	Lowest Quartile (n=988)	Second Quartile (n=716)	Third Quartile (n=1,109)	Fourth Quartile (n=946)
Investment-specific individual differences				
Subjective knowledge				
Mean	0.149	-0.062	-0.209	-0.381
Median	0.182	0.015	-0.194	-0.408
Std dev	0.982	0.870	0.892	0.964
T-statistic	100.61			
(p-value)	(<0.0001)			
Amount of investments				
Less than $10,000	46.63%	45.83%	35.12%	36.47%
$10,000-$24,999	10.56%	11.98%	13.62%	12.53%
$25,000-$49,999	11.25%	9.80%	12.68%	7.41%
$50,000-$99,999	11.31%	9.62%	12.03%	12.98%
$100,000-$199,999	8.89%	9.33%	11.72%	11.81%
$200,000 or more	11.36%	13.45%	14.83%	18.80%
	100%	100%	100%	100%
Chi-square	53.34			
(p-value)	(<0.0001)			
Mean	$98,986	$110,356	$121,521	$167,565
Median	$12,700	$12,640	$26,000	$27,125
Std dev	$335,782	$454,741	$447,707	$479,342
T-statistic	2.17			
(p-value)	(0.0899)			
Personal traits				
Attitudes toward risk				
Mean	-0.578	-0.321	-0.103	-0.032
Median	-0.555	-0.293	-0.059	-0.048
Std dev	1.064	0.933	0.840	0.956
T-statistic	51.29			
(p-value)	(<0.0001)			
Inherent novelty seeking				
Mean	0.299	-0.008	-0.095	-0.479
Median	0.212	-0.040	-0.161	-0.520
Std dev	0.984	0.959	0.843	0.969
T-statistic	132.24			
(p-value)	(< 0.0001)			

Independent Variables	Extent of Information Search			
	Lowest Quartile (n=988)	Second Quartile (n=716)	Third Quartile (n=1,109)	Fourth Quartile (n=946)
Demographic characteristics				
Age				
18-24	3.03%	5.31%	2.35%	5.65%
25-34	16.98%	19.83%	20.00%	16.91%
35-44	24.77%	22.15%	26.41%	17.86%
45-54	19.06%	19.56%	20.50%	21.41%
55-64	12.90%	13.72%	12.04%	15.55%
65 or older	23.27%	19.43%	18.69%	22.62%
	100%	100%	100%	100%
Chi-square	76.27			
(p-value)	(<0.0001)			
Mean	49.82	48.17	48.13	49.76
Median	47.00	46.00	45.00	50.00
Std dev	16.41	16.90	16.11	16.90
T-statistic	12.21			
(p-value)	(<0.0001)			
Education				
Less than high school	20.38%	19.49%	16.12%	18.21%
High school graduate	32.30%	28.41%	27.18%	25.05%
Some college	26.92%	26.21%	26.36%	28.27%
BS or more	20.40%	25.98%	30.33%	28.47%
	100%	100%	100%	100%
Chi-square	19.82			
(p-value)	(0.0191)			
Income				
Less than $35,000	49.81%	48.99%	39.51%	42.64%
$35,000-$59,999	23.51%	21.24%	26.53%	28.49%
$60,000-$99,999	16.12%	18.47%	22.10%	17.26%
$100,000 or more	10.55%	11.30%	11.86%	11.60%
	100%	100%	100%	100%
Chi-square	40.43			
(p-value)	(<0.0001)			
Mean	$48,228	$50,317	$55,536	$50,745
Median	$34,800	$35,000	$45,000	$36,000
Std dev	$60,161	$55,958	$36,719	$70,543
T-statistic	0.86			
(p-value)	(0.4601)			

Table 5

Descriptive Statistics: Consumers' Use of Literature As an Information Source

Independent variables	Users (n=2,271)	Non-users (n=1,488)
Investment-specific individual differences		
Subjective knowledge		
Mean	-0.097	-0.133
Median	0.061	-0.161
Std dev	0.934	0.968
T-statistic	17.83	
(p-value)	(< 0.0001)	
Amount of investments		
Less than $10,000	28.72%	50.85%
$10,000-$24,999	10.69%	13.38%
$25,000-$49,999	8.86%	11.76%
$50,000-$99,999	13.79%	9.78%
$100,000-$199,999	14.19%	7.43%
$200,000 or more	23.74%	7.00%
	100%	100%
Chi-square	553.69	
(p-value)	(<0.0001)	
Mean	$201,882	$60,860
Median	$53,000	$9,500.
Std dev	$592,874	$201,341
T-statistic	34.85	
(p-value)	(<0.0001)	
Personal traits		
Attitudes toward risk		
Mean	0.097	-0.529
Median	0.105	-0.461
Std dev	0.928	0.935
T-statistic	123.3187.70	
(p-value)	(< 0.0001)	
Inherent novelty seeking		
Mean	-0.082	-0.037
Median	-0.102	-0.153
Std dev	0.974	0.983
T-statistic	0.03	
(p-value)	(0.8644)	

Independent variables	Users (n=2,271)	Non-users (n=1,488)
Demographic characteristics		
Age		
18-24	5.22%	2.83%
25-34	19.98%	17.07%
35-44	25.05%	21.48%
45-54	22.13%	18.49%
55-64	12.40%	14.30%
65 or older	15.22%	25.83%
	100%	100%
Chi-square	26.68	
(p-value)	(<0.0001)	
Mean	46.45	51.07
Median	44.00	49.00
Std dev	15.51	17.09
T-statistic	2.66	
(p-value)	0.1030	
Education		
Less than high school	8.55%	26.58%
High school graduate	21.40%	34.05%
Some college	30.37%	24.12%
BS or more	39.67%	15.25%
	100%	100%
Chi-square	457.18	
(p-value)	(<0.0001)	
Income		
Less than $35,000	31.13%	56.37%
$35,000-$59,999	26.14%	24.26%
$60,000-$99,999	24.17%	13.95%
$100,000 or more	18.56%	5.42%
	100%	100%
Chi-square	510.37	
(p-value)	(<0.0001)	
Mean	$66,483	$39,041
Median	$50,000	$30,000
Std dev	$126,626	$37,142
T-statistic	22.68	
(p-value)	(<0.0001)	

Table 6

Descriptive Statistics: Consumers' Use of Media as an Information Source

Independent variables	Users (n=1,598)	Non-users (n=2,161)
Investment-specific individual differences		
Subjective knowledge		
Mean	-0.043	-0.156
Median	-0.015	-0.162
Std dev	0.968	0.943
T-statistic	28.57	
(p-value)	(<0.0001)	
Amount of investments		
Less than $10,000	34.36%	43.97%
$10,000-$24,999	10.25%	13.11%
$25,000-$49,999	8.64%	11.35%
$50,000-$99,999	11.66%	11.54%
$100,000-$199,999	11.90%	9.76%
$200,000 or more	23.19%	10.26%
	100%	100%
Chi-square	238.07	
(p-value)	(<0.0001)	
Mean	$194,303	$89,465
Median	$39,700	$15,700
Std dev	$577,985	$328,140
T-statistic	8.86	
(p-value)	(0.0029)	
Personal traits		
Attitudes toward risk		
Mean	0.006	-0.373
Median	0.044	-0.294
Std dev	0.977	0.961
T-statistic	15.67	
(p-value)	(< 0.0001)	
Inherent novelty seeking		
Mean	-0.066	-0.052
Median	-0.123	-0.137
Std dev	0.976	0.980
T-statistic	0.01	
(p-value)	(0.9350)	

Independent variables	Users (n=1,598)	Non-users (n=2,161)
Demographic characteristics		
Age		
18-24	4.79%	3.47%
25-34	17.94%	18.59%
35-44	25.34%	21.97%
45-54	21.02%	19.68%
55-64	13.25%	13.54%
65 or older	17.67%	22.74%
	100%	100%
Chi-square	8.18	
(p-value)	0.1466	
Mean	47.82	49.59
Median	46.00	48.00
Std dev	16.21	16.70
T-statistic	24.79	
(p-value)	(<0.0001)	
Education		
Less than high school	13.33%	21.02%
High school graduate	21.37%	31.81%
Some college	29.30%	25.76%
BS or more	36.00%	21.41%
	100%	100%
Chi-square	159.86	
(p-value)	(<0.0001)	
Income		
Less than $35,000	37.58%	48.70%
$35,000-$59,999	22.20%	26.53%
$60,000-$99,999	22.45%	16.62%
$100,000 or more	17.77%	8.15%
	100%	100%
Chi-square	175.07	
(p-value)	(<0.0001)	
Mean	$63,072	$45,553
Median	$45,050	$35,000
Std dev	$110,502	$77,524
T-statistic	1.72	
(p-value)	(0.1900)	

Table 7

Descriptive Statistics: Consumers' Use of the Internet As an Information Source

Independent variables	Users (n=1,054)	Non-users (n=2,705)
Investment-specific individual differences		
Subjective knowledge		
Mean	-0.040	-0.137
Median	-0.005	-0.149
Std dev	0.964	0.949
T-statistic	45.85	
(p-value)	(< 0.0001)	
Amount of investments		
Less than $10,000	22.74%	45.08%
$10,000-$24,999	11.68%	12.29%
$25,000-$49,999	11.52%	10.21%
$50,000-$99,999	15.87%	10.57%
$100,000-$199,999	12.47%	9.99%
$200,000 or more	25.72%	11.87%
	100%	100%
Chi-square	198.10	
(p-value)	(<0.0001)	
Mean	$219,172	$101,504
Median	$55,000	$15,000
Std dev	$641,850	$358,278
T-statistic	8.47	
(p-value)	(0.0036)	
Personal traits		
Attitudes toward risk		
Mean	0.278	-0.372
Median	0.285	-0.297
Std dev	0.926	0.954
T-statistic	185.61	
(p-value)	(<0.0001)	
Inherent novelty seeking		
Mean	0.138	-0.103
Median	0.140	-0.187
Std dev	0.916	0.988
T-statistic	137.93	
(p-value)	(<0.0001)	

Independent variables	Users (n=1,054)	Non-users (n=2,705)
Demographic characteristics		
Age		
18-24	6.95%	3.19%
25-34	27.29%	16.27%
35-44	32.74%	20.80%
45-54	20.26%	20.09%
55-64	9.32%	14.42%
65 or older	3.44%	25.23%
	100%	100%
Chi-square	8.47	
(p-value)	(0.0036)	
Mean	40.76	50.94
Median	39.00	49.00
Std dev	11.83	16.91
T-statistic	80.89	
(p-value)	(<0.0001)	
Education		
Less than high school	5.18%	21.63%
High school graduate	14.08%	31.75%
Some college	30.32%	26.12%
BS or more	50.42%	20.49%
	100%	100%
Chi-square	290.06	
(p-value)	(<0.0001)	
Income		
Less than $35,000	23.22%	50.19%
$35,000-$59,999	23.70%	25.44%
$60,000-$99,999	29.08%	16.05%
$100,000 or more	24.00%	8.32%
	100%	100%
Chi-square	339.46	
(p-value)	(<0.0001)	
Mean	74,709	45,811
Median	61,200	34,269
Std dev	72,082	92,930
T-statistic	2.11	
(p-value)	(0.1466)	

Table 8

Descriptive Statistics: Consumers' Use of Friends/family As an Information Source

Independent variables	Users (n=1,496)	Non-users (n=2,263)
Investment-specific individual differences		
Subjective knowledge		
Mean	-0.246	-0.048
Median	-0.223	-0.039
Std dev	0.918	0.964
T-statistic	64.28	
(p-value)	(<0.0001)	
Amount of investments		
Less than $10,000	36.02%	43.47%
$10,000-$24,999	13.34%	11.52%
$25,000-$49,999	9.66%	10.90%
$50,000-$99,999	12.64%	10.99%
$100,000-$199,999	12.51%	9.33%
$200,000 or more	15.82%	13.79%
	100%	100%
Chi-square	27.05	
(p-value)	(<0.0001)	
Mean	$134,407	$117,989
Median	$25,300	$16,800
Std dev	$443,052	$421,449
T-statistic	17.99	
(p-value)	(<0.0001)	
Personal traits		
Attitudes toward risk		
Mean	-0.010	-0.382
Median	-0.026	-0.300
Std dev	0.914	0.994
T-statistic	0.00	
(p-value)	(0.9760)	
Inherent novelty seeking		
Mean	-0.119	-0.023
Median	-0.179	-0.097
Std dev	0.926	1.006
T-statistic	13.13	
(p-value)	(0.0003)	

Independent variables	Users (n=1,496)	Non-users (n=2,263)
Demographic characteristics		
Age		
18-24	5.80%	2.85%
25-34	24.96%	14.72%
35-44	28.22%	20.22%
45-54	20.26%	20.05%
55-64	10.51%	15.08%
65 or older	10.26%	27.08%
	100%	100%
Chi-square	189.53	
(p-value)	(<0.0001)	
Mean	43.53	52.04
Median	42.00	51.00
Std dev	14.62	16.79
T-statistic	177.01	
(p-value)	(<0.0001)	
Education		
Less than high school	10.76%	22.78%
High school graduate	23.19%	31.25%
Some college	29.35%	25.28%
BS or more	36.70%	20.38%
	100%	100%
Chi-square	85.60	
(p-value)	(<0.0001)	
Income		
Less than $35,000	36.56%	49.75%
$35,000-$59,999	26.49%	24.33%
$60,000-$99,999	22.10%	16.57%
$100,000 or more	14.85%	9.35%
	100%	100%
Chi-square	53.65	
(p-value)	(<0.0001)	
Mean	$57,442	$47,889
Median	$45,000	$34,883
Std dev	$100,606	$83,445
T-statistic	4.09	
(p-value)	(0.0432)	

Table 9

Descriptive Statistics: Consumers' Use of Professional Financial Services Providers As an Information Source

Independent variables	Users (n=952)	Non-users (n=2,807)
Investment-specific individual differences		
Subjective knowledge		
Mean	-0.146	-0.113
Median	-0.168	-0.100
Std dev	0.936	0.956
T-statistic	5.22	
(p-value)	(0.0224)	
Amount of investments		
Less than $10,000	15.09%	46.02%
$10,000-$24,999	12.53%	12.10%
$25,000-$49,999	7.65%	11.03%
$50,000-$99,999	14.15%	11.06%
$100,000-$199,999	19.86%	8.57%
$200,000 or more	30.72%	11.24%
	100%	100%
Chi-square	293.84	
(p-value)	(<0.0001)	
Mean	$268,442	$94,854
Median	$100,508	$12,864
Std dev	$740,363	$326,142
T-statistic	24.68	
(p-value)	(<0.0001)	
Personal traits		
Attitudes toward risk		
Mean	0.184	-0.336
Median	0.251	-0.264
Std dev	0.922	0.971
T-statistic	57.68	
(p-value)	(<0.0001)	
Inherent novelty seeking		
Mean	-0.114	-0.046
Median	-0.094	-0.143
Std dev	0.940	0.986
T-statistic	8.18	
(p-value)	(0.0043)	

Independent variables	Users (n=952)	Non-users (n=2,807)
Demographic characteristics		
Age		
18-24	3.29%	4.03%
25-34	17.89%	18.47%
35-44	18.41%	24.03%
45-54	19.10%	20.33%
55-64	18.60%	12.40%
65 or older	22.71%	20.74%
	100%	100%
Chi-square	41.52	
(p-value)	(<0.0001)	
Mean	50.21	48.76
Median	50.00	46.00
Std dev	16.13	16.63
T-statistic	39.95	
(p-value)	(<0.0001)	
Education		
Less than high school	6.26%	20.96%
High school graduate	20.12%	30.05%
Some college	30.13%	26.28%
BS or more	43.49%	22.71%
	100%	100%
Chi-square	150.34	
(p-value)	(<0.0001)	
Income		
Less than $35,000	22.72%	49.55%
$35,000-$59,999	30.42%	24.03%
$60,000-$99,999	25.93%	17.05%
$100,000 or more	20.93%	9.37%
	100%	100%
Chi-square	172.13	
(p-value)	(<0.0001)	
Mean	$73,073	$46,932
Median	$55,000	$35,000
Std dev	$177,574	$57,453
T-statistic	14.12	
(p-value)	(0.0002)	

Table 10

Correlation Coefficients among the Independent Variables

	Subjective knowledge	Amount of investment	Attitudes toward risk	Inherent novelty seeking	Age	Income
Subjective knowledge	1.0000 (0.0000)	0.19440 (< .0001)	0.22850 (< .0001)	0.28691 (< .0001)	0.15998 (< .0001)	0.14042 (< .0001)
Amount of investments		1.0000 (0.0000)	0.18122 (< .0001)	0.12410 (< .0001)	0.16130 (< .0001)	0.54852 (< .0001)
Attitudes toward risk			1.0000 (0.0000)	0.36047 (< .0001)	-0.14901 (< .0001)	0.15623 (< .0001)
Inherent novelty seeking				1.0000 (0.0000)	-0.09623 (< .0001)	0.08298 (< .0001)
Age					1.0000 (0.0000)	0.03748 (0.0216)
Income						1.0000 (0.0000)

Table 11
Results of Multiple Regression Analysis (N=3,759)

Independent Variable		Coefficient	Standard error	t-value
Investment-specific individual differences	Subjective knowledge	-0.3157	0.0147	-21.45***
	Amount of investments ($10,000)	4.3437E-4	1.2463E-4	3.49***
Personal traits	Attitudes toward risk	0.1964	0.0160	12.30***
	Inherent novelty seeking	-0.3184	0.0144	-22.11***
Demographic characteristics	Age	0.0041	0.0010	4.00***
	Education			
	Less than high school	-0.1239	0.0662	-1.87
	High school graduate	(base)		
	Some college	0.0489	0.0460	1.06
	BS or more	0.0421	0.0474	0.89
	Income			
	Less than $35,000	-0.1262	0.0454	-2.78**
	$35,000-$59,999	(base)		
	$60,000-$99,999	6.4085E-4	0.0444	0.01
	$100,000 or more	-0.0614	0.0413	-1.48
Intercept		-0.2008	0.0709	-2.83

F=112.63***
$R^2 = 0.2485$
Adjusted-$R^2 = 0.2463$

*** $\underline{p} < .001$ **$\underline{p} < .01$ *$\underline{p} < .05$

Table 12
Consumers' Use of Literature as A Source of Information (N=3,759)

Independent variable		Coefficient	Odds ratio	Wald Chi-square	p-value
Investment-specific individual differences	Subjective knowledge	0.2084	1.232	27.1711	<0.0001
	Amount of investments ($10,000)	0.0027	1.003	9.2892	0.0023
Personal traits	Attitudes toward risk	0.4832	1.621	121.9635	<0.0001
	Inherent novelty seeking	-0.0087	0.991	0.0507	0.8219
Demographic characteristics	Age	-0.0040	0.996	2.1548	0.1421
	Education				
	Less than high school	-0.3804	0.684	4.6635	0.0308
	High school graduate	(base)			
	Some college	0.4448	1.560	15.3930	<0.0001
	BS or more	0.8229	2.277	49.0547	<0.0001
	Income				
	Less than $35,000	-0.7705	0.463	46.3014	<0.0001
	$35,000-$59,999	(base)			
	$60,000-$99,999	-0.2948	0.745	7.1173	0.0076
	$100,000 or more	0.2135	1.238	3.5228	0.0605
Intercept		0.3058		2.8880	0.0892

Chi-square of Likelihood Ratio = 841.2444***
R-square = 0.2005

***$p < .001$

Table 13
Consumers' Use of Media as A Source of Information (N=3,759)

Independent variable		Coefficient	Odds ratio	Wald Chi-square	p-value
Investment-specific individual differences	Subjective knowledge	0.2332	1.263	40.7359	<0.0001
	Amount of investments ($10,000)	0.0006	1.001	2.4157	0.1201
Personal traits	Attitudes toward risk	0.3934	1.482	95.7807	<0.0001
	Inherent novelty seeking	0.0095	1.010	0.0720	0.7885
Demographic characteristics	Age	0.0021	1.002	0.7115	0.3989
	Education				
	Less than high school	-0.0813	0.922	0.2105	0.6464
	High school graduate	(base)			
	Some college	0.3024	1.353	6.6455	0.0099
	BS or more	0.4871	1.628	16.8331	<0.0001
	Income				
	Less than $35,000	-0.3197	0.726	8.1698	0.0043
	$35,000-$59,999	(base)			
	$60,000-$99,999	-0.2429	0.784	5.1166	0.0237
	$100,000 or more	0.0530	1.054	0.2912	0.5894
Intercept		-0.6866		14.6293	0.0001

Chi-square of Likelihood Ratio = 371.0505***
R-square = 0.0940

***p<.001

Table 14
Consumers' Use of the Internet as A Source of Information (N=3,759)

Independent variable		Coefficient	Odds ratio	Wald Chi-square	p-value
Investment-specific individual differences	Subjective knowledge	0.3835	1.467	75.7614	<0.0001
	Amount of investments ($10,000)	0.0002	1.000	0.5505	0.4581
Personal traits	Attitudes toward risk	0.4870	1.627	99.4970	< .0001
	Inherent novelty seeking	0.2254	1.253	28.3360	< .0001
Demographic characteristics	Age	-0.0488	0.952	200.9028	<0.0001
	Education				
	Less than high school	-0.2326	0.792	0.5186	0.4715
	High school graduate	(base)			
	Some college	0.6267	1.871	14.4779	0.0001
	BS or more	0.9470	2.578	34.0933	<0.0001
	Income				
	Less than $35,000	-1.0885	0.337	51.6562	<0.0001
	$35,000-$59,999	(base)			
	$60,000-$99,999	-0.4183	0.658	10.5350	0.0012
	$100,000 or more	0.1412	1.152	1.7046	0.1917
Intercept		0.8541		14.0898	0.0002

Chi-square of Likelihood Ratio = 918.4520***
R-square = 0.2168

***$p<.001$

Table 15
Consumers' Use of Friends/family as A Source of Information (N=3,759)

Independent variable		Coefficient	Odds ratio	Wald Chi-square	p-value
Investment-specific individual differences	Subjective knowledge	-0.1015	0.903	7.8530	0.0051
	Amount of investments ($10,000)	-0.0001	1.000	0.1819	0.6698
Personal traits	Attitudes toward risk	0.0858	1.090	4.6920	0.0303
	Inherent novelty seeking	-0.1626	0.850	20.6270	<0.0001
Demographic characteristics	Age	-0.0324	0.968	152.5789	<0.0001
	Education				
	Less than high school	-0.2599	0.771	1.9655	0.1609
	High school graduate	(base)			
	Some college	0.2665	1.305	5.2454	0.0220
	BS or more	0.5184	1.679	19.1060	<0.0001
	Income				
	Less than $35,000	-0.3667	0.693	10.5995	0.0011
	$35,000-$59,999	(base)			
	$60,000-$99,999	-0.1073	0.898	0.9907	0.3196
	$100,000 or more	0.0266	1.027	0.0725	0.7877
Intercept		0.9982		32.0666	<0.0001

Chi-square of Likelihood Ratio = 322.9836***
R-square = 0.0823

***$p < .001$

Table 16

Consumers' Use of Professional Financial Service Providers as A Source of Information (N=3,759)

Independent variable		Coefficient	Odds ratio	Wald Chi-square	p-value
Investment-specific individual differences	Subjective knowledge	-0.1497	0.861	13.3855	0.0003
	Amount of investments ($10,000)	0.0005	1.000	2.4964	0.1141
Personal traits	Attitudes toward risk	0.3213	1.379	48.3065	<0.0001
	Inherent novelty seeking	-0.1283	0.880	10.1406	0.0015
Demographic characteristics	Age	0.0197	1.020	45.1258	<0.0001
	Education				
	Less than high school	-0.5928	0.553	4.6209	0.0316
	High school graduate	(base)			
	Some college	0.4392	1.552	8.6793	0.0032
	BS or more	0.6634	1.941	20.2077	<0.0001
	Income				
	Less than $35,000	-0.8678	0.420	37.8166	< 0.0001
	$35,000-$59,999	(base)			
	$60,000-$99,999	-0.1741	0.840	2.1296	0.1445
	$100,000 or more	-0.0025	0.997	0.0006	0.9806
Intercept		-2.4394		128.6169	<0.0001

Chi-square of Likelihood Ratio = 356.3646***

R-square = 0.0904

***p<.001

Table 17
<u>Summary of Hypotheses Testing</u>

Dependent variable	Hypothesis	Result
Consumers' extent of information search	H1.1 Subjective knowledge (-)	Supported
	H1.2a Subjective knowledge (+)	Not tested
	H1.3 Subjective knowledge (+)	Not tested
	H2 The amount of investment (+)	Supported
	H3 Attitude toward risk (risk loving) (-)	Not supported
	H4 Inherent novelty seeking (+)	Not supported
	H5a Income (-)	Not supported
	H6 Education (+)	Not supported
	H7 Age (-)	Not supported
Use of literature	H1.2b Subjective knowledge (+)	Supported
	H5b Income (-)	Partially supported
Use of media	H1.2c Subjective knowledge (+)	Supported
	H5c Income (-)	Partially supported
Use of the Internet	H1.2d Subjective knowledge (+)	Supported
	H5d Income (-)	Partially supported
Use of friends/family	H1.2e Subjective knowledge (+)	Not supported
	H5e Income (-)	Partially supported
Use of professional financial service providers	H1.2f Subjective knowledge (-)	Supported
	H5f Income (+)	Partially supported

Table 18
Summary of Logistic Regression Results

	Independent variable	Use of literature	Use of media	Use of the Internet	Use of friends/family	Use of professional services
Investment-specific individual differences	Subjective knowledge	+	+	+	-	-
	Amount of investment ($10,000)	+	n.s.	n.s.	n.s.	n.s.
Personal traits	Attitudes toward risk	+	+	+	+	+
	Inherent novelty seeking	n.s.	n.s.	+	-	-
Demographic characteristics	Age	n.s.	n.s.	-	-	+
	Education					
	Less than high school	-	n.s.	n.s.	n.s.	-
	High school graduate	(base)	(base)	(base)	(base)	(base)
	Some college	+	+	+	+	+
	BS or more	+	+	+	+	+
	Income					
	Less than $35,000	-	-	-	-	-
	$35,000-$59,999	(base)	(base)	(base)	(base)	(base)
	$60,000-$99,999	-	-	-	n.s.	n.s.
	$100,000 or more	+[a]	n.s.	n.s.	n.s.	n.s.

Note 1. "+" indicates a positive relationship between the independent variable and the dependent variable at p=0.05 level.

2. "-" indicates a negative relationship between the independent variable and the dependent variable at p=0.05 level.

3. "n.s." indicates there is no significant relationship between the independent variable and the dependent variable.

Footnote a: This effect is marginally significant (p=0.06).

FIGURE

Figure 1 A Model of Information Search When Making Investment Decisions